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THE MIND OF MAN AND HIS SECURITY

PRESIDENT'S ADDRESS

ROCK SLEYSTER, M.D.
WAUWATOSA, WIS.

One by one the great plagues that used to devastate mankind are being overcome. No longer does civilized man live in constant fear of cholera, smallpox and bubonic plague. Typhoid has become so rare that many a modern physician has never seen a case of this disease. Even diphtheria is being brought so certainly under man's control that last year twenty-four cities in the United States did not have a single death from diphtheria. Hardly a decade passes without some new announcement of a phenomenal discovery. In our own time we have seen arsphenamine for syphilis, insulin for diabetes, liver for pernicious anemia, biologic preparations for pneumonia and for scarlet fever, sulfanilamide and sulfapyridine for streptococcic and pneumococcic and similar infections. We have seen the rise of physical therapy and the growth of a new field called allergy. We have seen life expectancy rise from 40 years at birth to 62 years. What fields remain to be conquered?

Among the problems which yet confront us, mental defect and mental disease are increasingly significant. They are imposing in their scope. An understanding of the human mind and of human thinking may aid in the solution of problems of government.

On any day nearly 1 per cent of all of the people [1] in this country, actually 1,300,000 people, are incapacitated by epilepsy, by feeblemindedness and by various types of mental illness. The figure is obtained by adding to 550 of every hundred thousand of our population who have nervous and mental disease and who are not in hospitals the total number now being cared for in sanatoriums, hospitals and other institutions. Patients with mental disease occupy 47 per cent of the hospital beds in this country. For the country as a whole, the number of persons hospitalized for mental disease increased more than 40 per cent from 1926 to 1936. The estimated cost of maintenance of these beds is $230,865,000, with an additional cost of $18,178,000 for patients under private care. Three hundred Americans enter institutions for mental patients daily for the first time. In addition to hospitalized patients, several millions are more or less incapacitated because of mental illness or disturbances. In such states as Massachusetts and New York, where hospital facilities are most nearly adequate and where most reliable statistics are available, one out of 150 adults in the present general population is hospitalized because of mental disease. About 1 per cent of the adult population were under care in mental hospitals at some time during the past year. From 5 to 6 per cent of the general population will spend some time in mental hospitals during their lifetime. Including nonhospitalized persons with mental illness, 2 per cent are incapacitated some time of each year. At some time in their lives 10 per cent of the adult general population will be more or less incapacitated by mental illness. Accepting studies made in Massachusetts, fifty-seven of every thousand male infants and fifty-three of every thousand female infants will live to be committed to mental hospitals. It has been estimated that loss of earnings of hospitalized mental patients, plus the cost of maintenance, represents an annual economic loss in this country of $783,586,000. These figures, bluntly stated, define the scope of our problem. Let us see what hope exists in our attack on it.

CHIEF PROBLEMS IN NERVOUS AND MENTAL DISEASE

Epilepsy, or the falling sickness, has been recognized by the historians from Homer to those of today as the most frightening of human illnesses. The sudden loss of consciousness, the convulsions, the shocking accidents and the dependence associated with this condition make it outstanding as a pressing question. Surely intensified and expanded research on epilepsy is most needed. True, there are available in this country a number of research funds and endowments devoted to the study of this disease. We have learned much about the phenomena associated with it. Every new development in the study of the human body, including most recently the electric encephalograph, has been devoted to a study of this condition; yet our progress has been slight. New remedies for diminishing the threshold of excitation, diets and physical methods of treatment which aid in controlling the number of the attacks and which may diminish to some extent their intensity are announced from time to time. Yet there still remains to be found for this disease, as already is available for some other diseases, a method of control or of treatment that can be included in that magic word "cure," which is the inspiration of every true physician. Perhaps it may be found that there is no one epilepsy and that a variety of convulsive disorders concern us. Such a definition of the problem only enhances its importance.

THE SPASTIC CHILD

Again appealing to the physician for as prompt a solution as possible is the question of the spastic child. These children, who from injury at birth or from other

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1. Zubin, Joseph: The Mentally Ill and Mentally Handicapped in Institutions, Pub. Health Rep., supp. 146, 1938, pp. 1-20.

cause develop disability associated with motion of the body and sometimes deterioration of the mental processes as well, command the interest and the pity of all of us. For many of them permanent care in the home or in an institution seems the only answer. The care of these children illustrates how modern medicine, including the knowledge and the work of many specialties, may be brought to bear for prevention and treatment, for reeducation and for complete control. In the prevention of this condition we must study not only the constitution and heredity but all of the toxic changes that may act on the germ cell as it develops within the mother's body. We need the finest control of the art of the obstetrician by whose assistance the child comes into the world. Once the handicap is recognized, the specialist in the care and feeding of children, the orthopedic surgeon, the child psychologist and the psychiatrist must combine in giving their utmost to enable the child to make the most of the functions that it possesses. Perhaps by the very nature of mankind the births of "spastic" children will never be wholly controlled, yet surely the incidence may be reduced to the irreducible minimum and rehabilitation employed to the utmost utilization.

FEEBLEMINDEDNESS

For the control of feeblemindedness, modern medicine must look to the investigators in genetics and heredity for advice in limiting the production of children incapacitated from birth to meet the mental needs of modern civilization. There is no panacea that we can offer for these fundamental problems of humanity and civilization. Certainly it has not yet been established that modern methods of the prevention of conception in their application to mankind as a whole can control the production of such specimens. Neither is there any evidence that laws regulating sterilization of the parents of the feebleminded will in any serious manner diminish the total number of feebleminded. The evidence that is available indicates that at least 10,000,000 people of 130,000,000 in this country bear within their bodies elements which may result occasionally in the production of a feebleminded child. Our nation is not unique in this regard; indeed, some other nations offer a far greater likelihood of increased mental deficiency. Apparently this is one of those problems of mankind in the mass which nature must eventually solve, as nature has settled many another problem of disease in the past. The laws of biology are more immutable than those of man. The fact that even with the best of education and nurture that we can give the feebleminded they still tend to die young and thus do not invariably reproduce is an indication of nature's long range technic in keeping multiplication of the unfit under control.

Let me emphasize again that most authorities are agreed that there has been no continuous increase in the number of the feebleminded, of the mentally defective and of those with mental disease. Such increase as has occurred is the result of the application to these human beings, among all of us, of what modern medicine has done to decrease disease as a whole and thus to prolong life for all of us.

DEMENTIA PARALYTICA

Research in the field of nervous and mental diseases has been particularly concerned in the past ten years with the problem of general paralysis, which the public calls paresis or softening of the brain and which the scientists call dementia paralytica. What great discoveries have led to possible control of general paresis? Foremost was the determination that the spirochetes of syphilis may invade the human brain and there produce this disease. This discovery, made by a Japanese of German training in an American institution, points again to the universality of medical science. Next came the knowledge that drugs used for the control of syphilis, properly applied, may be of great virtue in impeding the progress of this condition. More recently attention has centered on heat treatment or artificial fever produced by various methods. Now here is a disease of which we know the cause and for which we have certain methods of diagnosis and treatment. Are we ready to say that general paralysis can be completely eliminated? Unfortunately no! A great diminution in the total number of cases of syphilis will bring about a lessened number of cases of this disease. Once established in the brain, however, the spirochete seems inevitably to produce damage to the tissues of the nervous system. The most that treatment can do is apparently to stop the progress of such damage. It cannot restore tissue that has been destroyed and degenerated. Until the time comes when every invasion of the spirochete is recognized and controlled at the earliest possible moment, cases of dementia paralytica will continue to demand medical and institutional attention. Complete elimination of this or of any other disease the dissemination of which depends on intercourse between human beings would require a control of the actions and of the lives of men beyond the power of even the most rigid of governments to establish. Such control would involve changes in our methods of living which are inconceivable under any civilization. Men whose minds and wills are animated temporarily by some single motivation as of religion or nation or race, or who follow blindly after strange gods or strange leaders, may sacrifice freedom of thought and freedom of speech and freedom of action to seek a special goal. But eventually the mind awakens and biology triumphs.

DEMENTIA PRAECOX

Dementia praecox, or the so-called insanity of adolescence, now is responsible for at least 60,000 patients in our institutions and perhaps for another 30,000 persons who are in early or in controlled stages of the disease and not yet hospitalized. Indeed, there are some who insist that there may be far more of these people, including noted statesmen, poets and financiers, outside institutions than within. Manifestations of schizophrenia occur frequently in many hundreds of thousands of so-called normal people. The application of the insulin shock method and of the so-called metrazol shock treatment has given a new stimulus and new inspiration to physicians who are responsible for the care of these patients. Apparently these technics bring about fundamental constitutional changes in the bodies of those who are incapacitated. These changes are reflected in the brain. One of the greatest difficulties of the specialist in nervous and mental disease in the past has been the development of technics whereby treatment applied to the human body as a whole could be made effective on the tissue of the brain. Many authorities are convinced that the application of these new methods will enormously reduce the total number of cases of this type in our institutions. Yet every one who stops solemnly and carefully to consider the

knowledge thus far acquired and published would hesitate to evaluate the total progress that can be made. The diseases with which we are here concerned are diseases of a lifetime. Perhaps it may require a lifetime, or several lifetimes, before the physicians of the future will be able to measure in terms that are scientific what has actually been accomplished by these new technics.

EXPANSION OF THE FIELD OF NERVOUS AND MENTAL DISEASES

People in general, and even most physicians, seldom pause to consider the vast expansion that has occurred in the field of nervous and mental disease. New methods of diagnosis, new research in the pathologic changes that occur in the tissues, the science of the psychologist and the art of the psychoanalyst have broadened tremendously the work of the neuropsychiatrist. Most people know about the diseases that have already been mentioned. To the vast majority such terms as myasthenia gravis, apraxia, polioencephalitis, lenticular degeneration, cataplexy, disseminated sclerosis and myelitis represent words with a hazy or slight significance. The modern nomenclature of conditions affecting the nervous system comprises many hundreds of such terms indicating the intricate detail and multiplicity of signs, symptoms and manifestations with which the modern neurologist and psychiatrist must concern himself.

Increasingly the effects of the mind on the physical functions of the body become apparent. The actions of the heart, the stomach and intestines, the blood vessels and the skin may be intimately and seriously affected by mental processes. Yet this does not signify that relations of mind to body may be lumped into a single category or that closing of the mind to physical manifestations will remove them not only from consciousness but also from existence. It means instead that we must intensify our research into the mechanisms that are involved so that the knowing and understanding mind may be truly the master of the body in which it functions.

THE PSYCHIATRIST LOOKS AT THE FUTURE

Most significant among all the aspects of our civilization is not the increase in the number of the mentally afflicted. This, like many another of the problems with which statesmen and economists concern themselves, is a reflection of just one simple fact for which the sciences of medicine and public health must take the responsibility: Human beings tend to survive, to be more healthful, to live longer than they used to. This explains the fact that more people die now from cancer instead of dying from typhoid and from cholera and from smallpox. It explains why spastic children and the feebleminded and the epileptic survive instead of being included in the figures for infant mortality. It explains why heart disease and not tuberculosis is now captain of the men of death. It explains why a people who once troubled themselves little with the problems of old age now find the accumulation of economically dependent men and women past 65 and 70 years of age well nigh their chief concern. Man grown old is not efficient; he cannot labor with his body, and his mind is subject to loss of memory, slowness of action and occasionally queer aberrations.

The problem of the individual who is mentally afflicted is, of course, the concern of the individual psychiatrist much more than it is perhaps the concern of the world as a whole; our world has in these modern days so many concerns which demand its consideration. These concerns arise in most instances not out of individual thinking but out of the psychology of the mass of men, whose opinions are in many instances controlled by stimuli definitely planned to secure a certain result. Perhaps in a day when men were much more accustomed to thinking for themselves and to reasoning from the available knowledge, such influences might not be as effective as they are now. The citizen of the United States in Revolutionary times was a hardy pioneer who had fought the forces of men and of nature successfully and who knew where he wanted to go and what he wanted to do. Today the forces that have been developed by man as a result of modern invention in the field both of materials and of thought are so intricate and so great that frequently they are far beyond the ability of the average man to grasp. Hence bewildered, little men seek constantly for leadership without even sufficient data or background to determine whether or not that leadership is for good or for evil. The breakdown of the sense of individual responsibility is thus a menace not only to the individual but to the nation and to mankind.

Perhaps as a result of the belief of many a man that our civilization has failed, men seek increasingly for security. They wish to be protected against the hazards of unemployment, against the dependence of old age, against the pain and suffering associated with sickness. There has been no lack of self-anointed leaders ready to propose economic and governmental panaceas for meeting the difficulties in the situation. When the Congress of the United States first came to consider social security, the President of the United States warned them against charlatanism in the field of economics. That warning is as important today as it has ever been in the past. It is perhaps more important because of the increased complexity of the situation which confronts us and because of the fact that its long duration has apparently worn away the powers of resistance of many of those who did not at first succumb. But the medical profession, aware of the nature of men and the moral fiber of men, must oppose increasingly those forces which tend to sap vitality, to destroy initiative and to break down individual character. Ethnologists and sociologists know that the life of the race repeats the life of the individual and that the life of the individual repeats the life of the race. They know that nations are but masses of men and that national opinions are the reflections of individual thought. As men become increasingly willing to turn over to their statesmen or to the governments which those statesmen represent the individual responsibilities for which men in the past have fought and died, the vitality of the nation itself must become weakened. The loss of character and of individual initiative may not be pathologic in the sense that mental defect is pathologic. It may not be an illness in the sense that feeblemindedness is a disease, but its effects on the life of the nation as a whole are as weakening as would be a continued increase in the number of mentally defective among us.

These reflections lead to the inevitable conclusion that it is necessary for physicians and for the nation as well to weigh carefully the extent to which the responsibility of the individual for his own care in times of old age and of disease and of unemployment is to be turned over to the nation. In other words, how

great a price are we prepared to pay for what is called security? If national control over illness is to bring about a breakdown in the character of our people so that they will, like many a foreign nation, be ready to yield supinely to the wills of dictators and of dictator nations, the price will have been far too great. If protection against the hazards of illness and of old age is to include an unwillingness to battle against economic forces which bring about unemployment and national destitution, making the individual citizen ready to accept governmental gratuity on every conceivable occasion, again the price to be paid is far more than the goods are worth.

Today the American people stand before the world as a nation of free men where the processes of individual initiative, freedom of thought, controlled research and independent character have placed us in the very forefront of all the peoples in the world in science, in health, in our scale of living, in recreation and in the ability to enjoy life. It is true, as some of our statesmen have said, that not all the people are possessed of all these advantages, yet taken as a whole the statement is true of the vast majority of our people. By the same forces which have brought us to this high place we should be able to overcome the deficiencies of those who have not yet realized these great advantages and to give to them much of that which is enjoyed by the majority. To this purpose the American medical profession has repeatedly dedicated itself. The solutions of the problems of the nations so far as they concern medical care are the responsibility of the medical profession. That is a responsibility which a free medical profession has never avoided and to which it is at this very time giving its most serious consideration. The responsibility for restoring to this nation an economic status in which more and more independent citizens will be able through their own employment and through the returns coming from that employment to supply themselves with the necessities of life is a responsibility which must rest on the leaders of the nation in industry, in finance and in government. With these leaders also American medicine is ready and willing to cooperate in doing all that can be done to spread more widely the benefits of American life and living.

As President of the American Medical Association for the coming year it is to this task primarily that I propose to devote myself.

Lifeless Reports.—The physicians and surgeons of our great teaching hospitals become more and more dependent on technical experts. How easy, as the problems suggest themselves at the bedside, to accept the view that it is fitting that these highly trained and fully equipped men should undertake the investigation. But the result, so often is that from the first the reach is forced into a narrow channel of technicality from which it fails to emerge, and the work ends in one of those reports which, scientific though they may be in their cold logic, unfold no story, and remain uninspiring and lifeless. The fascination and importance of the problem in its wider and practical implications have been concealed, the inspiration that should drive to its solution has been lost, because the problem is no longer seen in its full perspective, a problem primarily concerning the living, in part concerning the dead, and in part deriving from the laboratory. It is just this integration that is of so much consequence to the vitality of medical research; and this integration is, and always must remain, chiefly within the special province of Clinical Science.—Lewis, Sir Thomas: Research in Medicine and Other Addresses, London, H. K. Lewis & Co., Ltd., 1939.

RESECTION OF THE LIVER

CONDITIONS FAVORABLE FOR OPERATION; METHODS; EXPERIMENTAL STUDIES

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Relatively few resections of the liver have been reported in surgical literature. Several recent textbooks and at least two modern systems of surgery do not even mention the operation. This is probably because so few cases occur in the individual surgeon's experience, no single surgeon having published reports of more than six cases; yet resections of the liver have been done successfully for many years. In the United States Keen [1] reported his first case forty-seven years ago and added his third case and tabulated seventy-six cases from the world literature forty years ago. Bastianelli,[2] one of the earliest operators, in addition to his original publication forty-three years ago has sent us a personal report of six cases. Garré [3] early stated that "no method can be introduced into general surgery unless it can be executed with simple means which every operator has at hand." More than thirty years ago he reported six successful operations in which hemorrhage was controlled by silk ligature of larger vessels and deep constricting catgut sutures. Growths requiring this procedure may confront any abdominal surgeon at any time and a knowledge of the methods that have been successfully used would make possible the saving of many lives. Fifty-nine instances of resection of the liver have been reported to us in correspondence with members and associates of members of the American Surgical Association and with twenty-four cases previously reported by members of the association it is evident that a large proportion of experienced abdominal surgeons encounter one or more hepatic conditions requiring resection at some time during many years of practice. A discussion of certain phases of this subject was given in an earlier paper.[4] We now repeat important considerations and add a report of experimental studies concerning hemorrhage and shock.

Favorable to safe liver resection are the following facts:

1. The lobes and subdivisions of the liver are supplied by independent arteries, so that one section can be removed without injury to the remaining sections.

2. Anastomoses between blood vessels of different lobes of the liver are free, insuring adequate circulation if a section is cut off from its normal blood supply.

3. Regeneration after removal of liver substance is rapid and quite complete.

The blood supply of the liver has been carefully studied by Martens.[5] His illustrations show that not only do the right and left lobes have each an independent artery but there are branches supplying smaller subdivisions, lobus quadratus and lobus caudatus. His injection and corrosion specimen also showed that if

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1. Keen, W. W.: Boston M. & S. J. **126**, 1892; Ann. Surg. **25**: 267, 1899.
2. Bastianelli: Policlinico (sez. chir.) **2**, 1895.
3. Garré: Surg., Gynec. & Obst. **5**: 331, 1907.
4. Tinker, M. B.: Ann. Surg. **102**: 728-741 (Oct.) 1935.
5. Martens: Arch. f. klin. Chir. **114**: 1001, 1920.

the artery supplying one lobe was injected the free anastomoses would carry the injection to all parts of the uninjected lobe.

Regeneration was experimentally studied many years ago by Ponfick [6] and also by von Meister.[6] It was found that four fifths of the livers of rabbits, rats and dogs could be removed without fatal outcome and would grow back to approximately normal after such extensive excision. More recently Fishback [7] of the Mayo Clinic has carried out similar experiments with the same results. He found that four-fifths regeneration occurred in from six to eight weeks. These experimental results as regards extent of regeneration were confirmed clinically by Wendel,[8] who found it necessary to do an intestinal resection on a woman whose liver he had resected two years previously.

METHODS OF RESECTION

The most satisfactory exposure of the liver for the average resection is a modified transverse incision slanting slightly toward parallel to the costal border. This is essentially the incision used by Kocher of Bern for surgery of the biliary tract. Study in the dissecting room in Cornell University Medical College, through the courtesy of Drs. Kerr and Papez, showed us that the region under the dome of the diaphragm on the right can be exposed fairly satisfactorily by dividing the eighth, ninth and tenth ribs near the attachment of the costal cartilages. This permits extra upward retraction of from 2 to 4 inches. A vertical extension of the incision upward toward the ensiform cartilage also helps if needed.

The control of hemorrhage has been the problem to which all surgeons have given most attention. McDill [9] suggested compression of the blood vessels and other structures supplying the liver by compression of the hepatoduodenal ligament with a rubber padded clamp applied in the foramen of Winslow. Kirschner [10] also suggests compression by finger pressure or a rubber covered intestinal clamp; but Ravdin, translator and editor of Kirschner's English edition, adds a note to the effect that such a procedure is accompanied by a profound fall in blood pressure and should be used cautiously. Kirschner also mentions that compression should be restricted to the shortest possible time because the intestine cannot recover if the blood supply is shut off more than a quarter of an hour.

Animal experimentation in the physiologic laboratories at Cornell University to determine the effect of compressing the blood vessels, nerves and ducts in the hepatoduodenal ligament has been possible through the cooperation of Prof. Joseph F. Dye. It showed the fall of blood pressure graphically in several cases by tracings on smoked drums. Rapidity and extent of fall in blood pressure varies with each animal, fifteen minutes being apparently about the maximum time that pressure could be safely continued, considerably less in some cases, since the intestine may become alarmingly blue. The clamping might save life in case of violent, uncontrollable hemorrhage; it could be used for a few minutes until other measures could be applied; it seems unnecessary and undesirable as a routine.

Mattress or chain sutures passed with a blunt needle through the entire thickness of the liver before cutting have been found effective in preventing hemorrhage by a large number of surgeons. If a special needle is not available, as is frequently the case, a large probe with an eye may be used or a long needle with the eye end pushed through first. A blunt needle pushes vessels aside, avoiding injury to larger hepatic vessels. It is important that ligatures should not be pulled too tightly, lest they cut through the friable liver tissue if a great thickness is transfixed, requiring heavy tension. To prevent such cutting, catgut sutures through the liver have been tied over celluloid or magnesium plates, rubber tubing or strips of fascia. A mattress needle, small rod or uterine probe as suggested by Dr. Leonard Freeman [11] accomplishes the same result with material which would almost always be available and could be easily removed when it had served its purpose.

Electrosurgery.—Oozing, which is very active from every point of the surface when the liver is cut with a scalpel, was prevented by Keen [1] and others by use of the actual cautery in the days before the introduction of electrosurgery. The radio cutting knife I have found equally efficient for this purpose,[4] more rapid and far less destructive: also radio cutting was found more satisfactory than the spark gap apparatus. Electrosurgical cutting is recommended by Kirschner [10] and has also been successfully used by surgeons of the University of California Clinic, by Lilienthal,[12] by Kelly and Ward,[13] by Howard Gray [14] and by others. Removal of a V shape section in resection of smaller tumors is recommended, when possible, by several surgeons as favoring ready approximation of raw surfaces; this not only helps in controlling hemorrhage but favors smooth healing. Covering the wound in the liver by omentum in animals and man has also been found helpful by Boljarski [15] and others.

Autotransfusion.—Great loss of blood from ruptured cavernous hemangioma or from extensive wounds may give rise to profound and sometimes fatal shock. When these growths or injuries are located, as they are most frequently, near the margin of the liver away from the larger bile ducts, there is little admixture of bile with the blood. In our previous paper autotransfusion of such blood was suggested. The possibility of serious results following autotransfusion from toxic choline derivatives or other substances was suggested by Morton.[16] Kirschner [10] suggests that the blood should be tested to determine the absence of agglutination or hemolysis in cases of rupture occurring more than twenty-four hours previously. He suggests collecting the blood by a ladle or suction; also that it may be citrated and immediately returned into a vein by means of a gauze covered funnel. Our experimental studies at Cornell after autotransfusion of an animal's own blood from hemorrhage of the liver do not show evidence of any serious toxic effect; in fact the tracings on the smoked drums showed either no important change in blood pressure or in some animals a rapid and well maintained rise in blood pressure and improvement in the general condition of the animal. Professor Dye states that he has repeatedly injected acetylcholine into the blood stream of animals experimentally without harmful effects.

6. Cited by Ewing, James: Neoplastic Disease, ed. 2, Philadelphia, W. B. Saunders Company, 1922, p. 676.
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13. Kelly, H. A., and Ward, G. E.: Electrosurgery, page 167, Philadelphia, W. B. Saunders Company, 1932, p. 737.
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16. Morton, J. S., in discussion on Tinker.[4]

Resection has been done for the following conditions:

Benign Growths: Hemangioma, ecchinococcus cysts, gummas, tuberculoma and destructive liver injuries. (Simpler measures are ordinarily available for the last three conditions.)

Malignant Growths: Carcinoma (including adenocarcinoma), sarcoma and hypernephroma.

Cavernous hemangiomas are relatively common tumors of the liver; they are frequently ruptured, giving rise to serious intra-abdominal hemorrhage and, because they are generally thin walled, the bleeding may start spontaneously. Our case, previously reported,[4] belongs in this class of growths. It is important in operating on these patients to excise wide of the growth, as hemorrhage even from a needle prick may be uncontrollable. Packing, actual cautery and even sutures are unavailing unless the stitches are placed in normal liver tissue. This is well shown by the following reports: Gray Turner[17] cites the case of a woman admitted to Guy's Hospital in collapse: a diagnosis of ruptured ectopic pregnancy was made; the abdomen was found to be full of blood; the pelvis was normal; hemorrhage from a hemangioma of the liver could not be controlled by suture or packing; the tumor was removed by cautery and the patient was given an infusion but died after one hour. Severe hemorrhage from a needle prick of a huge angioma of the right lobe is reported by Mantle[18] and quoted by Charles H. Peck.[19] The hemorrhage was uncontrollable by suture or packing and the patient died after two hours. Fatal hemorrhage was also reported by Borst and Chiari[20] and by a number of others. The fairly frequent pedunculated hemangiomas are much less difficult and dangerous. Peck[19] reported such a growth involving the entire left lobe, which was removed after the pedicle was clamped and the stump was closed with a continuous catgut suture; the tumor weighed 3 pounds 14 ounces (1,759 Gm.), the largest tumor removed in this country up to the time of this report. Clar[21] gives details of a successful operation by Schloffer, with a report of thirty others from the literature, an operative mortality slightly over one third of 1 per cent.

Malignant Tumors of the Liver.—As stated in our earlier paper,[4] many surgeons are pessimistic regarding resection of the liver for malignant growths. This has led others to abandon operation, although the experience of Keen,[1] McArthur[22] and Yeomans[23] among Americans and a number of foreign surgeons has shown the possibility of cures up to seven years' duration. Reliable pathologic diagnosis is indispensable. In Keen's[1] case the diagnosis of cylindric cell cancer by Coplin and Tinker was confirmed by William H. Welch and T. M. Prudden; in McArthur's[22] case the pathologic diagnosis of adenocarcinoma by Hektoen and Zeit was confirmed by Fenger; in Yeomans's[23] case the pathologic diagnosis of adenocarcinoma by Jefferies of the Philadelphia Polyclinic was confirmed by Ewing.[24]

Involvement of surrounding organs may offer special difficulties. In McArthur's[22] case the liver was involved by extension from cancer of the stomach, so that resection of the stomach as well as of the liver was required. Wendel[8] operated for carcinoma of the colon associated with cancer of the liver. Kellogg Speed[25] reported extensive involvement of the diaphragm and chest wall requiring resection, together with cancer of the liver. Cullen[26] reported nephrectomy for adenocarcinoma with a malignant condition involving the liver; the patient remained well for four years but eventually died of recurrence in the kidney region, the liver being entirely free from recurrence. All these patients recovered from operation and lived for several years.

Primary carcinomas of the liver sometimes seem favorable for operation because of the infrequency of metastases, slow growth and susceptibility to irradiation, as mentioned by McCallum,[27] Ewing[24] and Sternberg.[28] Adenocarcinomas, which are most frequent, respond well to irradiation. Several growths at first reported to be adenoma have later proved malignant, probably adenocarcinoma. In some cases operation has been repeated; in others postmortem examination or clinical symptoms have left no doubt as to the malignant nature of the growth. Sarcoma has been reported by Elliott[29] and a few others. Ewing[24] believes that there is difficulty in determining the character of the growth in these cases and questions the occurrence of sarcoma, also hypernephroma of the liver.

The unfavorable results following resection for cancer of the liver are based, to a considerable degree, on statistics of operations performed from twenty-five to forty years ago. Moreover Thoele,[30] publishing his report in 1913, overlooked two reports by Keen in 1899 in which the patients were living three years after the operation. Improvement in surgical technic and methods during the past twenty years should favorably influence the results in surgery of hepatic cancer. The combination of irradiation and surgery, which has added such remarkable improvement in the results of treatment of cancer of the thyroid, also a glandular organ, should be of help in similar hepatic conditions.

We have not noticed any report of experimental studies such as are described in this paper. Their important bearing in preventing hemorrhage and in preventing and combating postoperative shock seems to warrant the following summary:

RESULTS OF EXPERIMENTS IN LABORATORIES OF PHYSIOLOGY AT CORNELL UNIVERSITY

1. Clamping the hepatic artery and structures in the hepatoduodenal ligaments showed a gradual but at the end of fifteen minutes an extreme fall in blood pressure. Removal of the clamp is followed by a rapid rise in blood pressure to above normal, which is well maintained.

2. A fall in blood pressure occurs when sympathetic nerves are blocked with procaine hydrochloride and also when sympathetic nerves are stripped from the hepatic artery.

3. Autotransfusion of blood from wounds of the liver gives a prompt and well maintained rise in blood pressure and improvement in the animal's general condition. There is no apparent harmful effect from admixture of bile and other associated products with the blood from extensive lacerated wounds.

404 Savings Bank Building.

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THE ANTIBACTERIAL EFFECTS OF THE ORGANIC MERCURIAL COMPOUNDS

WITH SPECIAL REFERENCE TO THEIR USE AS GERMICIDES FOR THE STERILIZATION OF SURGICAL AND DENTAL INSTRUMENTS

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A search of the literature has revealed no carefully controlled work showing that any organic mercurial compound can be relied on to kill the spores of anaerobic bacteria. Nevertheless, claims have been made that these compounds can be depended on for the sterilization of instruments, and vast quantities of them are sold to physicians and dentists for that purpose.

Mercury in its various forms has been used in medicine since the time of the early alchemists, but it remained for Robert Koch [1] to popularize its use as an antiseptic. Immediately after his famous string experiments with anthrax spores the medical world believed that it had in its hands an all powerful germicide which would destroy any disease-producing organism, because apparently Koch had shown that very great dilutions of mercury bichloride would kill the spores of the most resistant organisms. Only a few years after this idea had become thoroughly instilled in the current literature [2] Geppert [3] (1889-1891) with carefully controlled experiments showed that mercury bichloride is a poor germicide although it possesses an almost unbelievable antiseptic or, better, bacteriostatic ability. Mercury bichloride at its best possesses several disadvantages which were known to Koch: It corrodes metal instruments, its apparent killing effect is diminished in the presence of organic matter and it coagulates protein. Furthermore, mercury bichloride cannot be used on the skin over long periods of time without causing dermatitis; it is toxic when injected parenterally and therefore cannot be used in chemotherapy. In spite of these objections and the observations of Geppert and others that mercury bichloride cannot be depended on to kill the spores of anthrax bacilli, it continued to be used because of its great antiseptic action. Chemists throughout the world attempted to produce a mercurial compound which would not have these disadvantages and perhaps might kill the sporulating organisms as well. The first products of these researches possessed few advantages over mercury bichloride, but just at the close of the World War several compounds appeared on the open market in the form of organic mercurials. Some of these were apparently free from the disadvantages of mercury bichloride. With certain types of laboratory tests they seem to be more effective than mercury bichloride. Clinical results indicated that they could be relied on as antiseptics. Many claims were made for them, some rightfully and some without the slightest scientific foundation. Among these claims it was suggested that certain of the products could be used for the "cold sterilization" of surgical and dental instruments. In fact, several manufacturers placed on the market preparations especially designed for this purpose. Practically all the germicidal claims made for such products were based on phenol coefficient tests in which only Staphylococcus aureus and Eberthella typhi were used. No adequate tests were made with sporulating organisms such as Bacillus anthracis, Clostridium tetani or the group of organisms causing gangrene.

Claims for the cold sterilization of instruments and for sporicidal activity found their way into many journals, textbooks and standard references. Even as late as 1937 the Council on Pharmacy and Chemistry of the American Medical Association accepted the claim for one organic mercurial that it is "a potent germicide for the spore-bearing and non-spore-bearing bacteria." [4] No experiments with organic mercurial compounds have been found in the literature comparable to those of Geppert with mercury bichloride.

That sutures cannot be rendered sterile by the use of mercurial compounds was first brought to my attention in 1937 while making a survey of the sterility of catgut sutures for the Council on Pharmacy and Chemistry.[5] Bulloch,[6] Meleney and Chatfield [7] and later Clock [8] pointed out that sutures treated with mercurials are not actually sterile but that the mercurials merely exert a bacteriostatic action on the organisms present. In making this survey for the Council I obtained some sutures which were more than 10 years old. These sutures were "sterilized" by a mercury method and were suspended in 1:1,000 potassium mercuric iodide tubing fluid. When sterility tests were made on them, twelve of the fifty-two sutures were found to contain viable spores, seven of which were of anaerobic bacteria. These results led me to question the advisability of using mercurial compounds for sterilization of instruments, especially after learning that no carefully controlled work had been done in which anaerobic spores were used as the test organism.

DEFINITION OF TERMS DESCRIBING ANTIBACTERIAL ACTION OF THE MERCURIALS

In order to have no misunderstanding regarding the terms used throughout this work, certain words commonly used to describe the antibacterial action of the mercurials are defined.

The present uses of the terms sterile and sterilization are given in a report of the Council on Pharmacy and Chemistry: [9] "The Council on Pharmacy and Chemistry has formally gone on record as disapproving of the use of the terms "sterile," "sterilize" and "sterilization" in a bacteriologic sense other than in their correct scientific significance; i. e., meaning the absence or destruction of all micro-organisms. These terms are not relative and to permit their use in a relative sense not only is incorrect but opens the way to abuse and misunderstanding."

A dissertation submitted to the Board of University Studies of the Johns Hopkins University.

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Dr. J. Howard Brown helped the author in planning this work and gave almost daily guidance and valuable criticism; Dr. Warfield M. Firor gave assistance and suggestions relative to the surgical problems involved, and Drs. Lloyd Felton and Paul N. Leech gave helpful criticism. Miss Elizabeth King gave technical assistance. Various commercial firms supplied the mercurials tested.

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The word antiseptic, around which much confusion has arisen in the past, should convey only one meaning: that which is carried in the word itself—the preventing of sepsis or putrefaction.

Regarding the words germicide and germicidal, there has been little difference of opinion among workers. The terms refer to anything that kills germs (microorganisms).

The words bactericide and bactericidal convey the same meaning as germicide, except that they apply to bacteria only.

The word disinfectant is commonly used to refer to substances used on inanimate objects. The meaning, as the word implies, is to render noninfectious. A disinfectant may be either an antiseptic or a germicide; that is, it may either prevent infection by preventing development of the organisms or destroy them outright.

Bacteriostatic or bacteriostasis refers to an agent or state which prevents the development of the organisms. An antiseptic which does not kill may be a bacteriostatic agent.

For a more detailed discussion of the true value of these words one is referred to Patterson's [10] "Meaning of Antiseptic, Disinfectant and Related Words." I am in thorough agreement with him that if one adheres to the strict denotation of these terms there will be no serious confusion among the laity or professional men.

Much confusion in medical literature has arisen because certain fundamental principles have not been taken into consideration. This is especially true concerning mercurial antiseptics or disinfectants. For instance, mercury bichloride, as Abbott [11] has pointed out, is capable, in strong concentration, of killing Staphylococcus aureus, while in very dilute solutions it is only bacteriostatic. Thus a compound may be antiseptic in concentrations too weak to be germicidal. Not only must the concentration of the active agent be considered but the following factors must also be considered in choosing the proper term to describe a particular action: the time of contact, chemical nature of the surrounding medium, the reaction (p_H), temperature, number of organisms present in proportion to the amount of chemical agent, the nature of the organism and the purpose for which the chemical is used.

PRELIMINARY EXPERIMENTS TO SHOW TO WHAT EXTENT ANAEROBES ARE ACTUALLY PRESENT ON INSTRUMENTS AFTER OPERATIONS

As a result of a review of the literature [12] it was decided to determine to what extent anaerobes were actually present on blades after operations. Arrangements were made with the Department of Surgery of the Johns Hopkins Hospital to secure blades used in a series of operations. The nurse in charge of operations had an attendant drop the blades into a sterile tube as the surgeon discarded them. Aseptic precautions were observed and there was very little chance of contamination. The blades from 120 operations were examined and 12 per cent were found to be contaminated with anaerobic spore-forming bacteria. Had these blades been "sterilized" by some inefficient chemical means and reused, there would have been the possibility of infecting other patients. Eight per cent of the contaminated blades were those used for incision of the skin, and this closely parallels the observations of Roberts, Johnson and Bruckner,[13] who found 8.5 per cent of the knives used for making the cutaneous incision to be contaminated with Clostridium welchii. These observations, together with the reports of infections in the literature, seem to indicate that the spore-forming anaerobes should also be used in determining whether a chemical agent is suitable for disinfecting instruments. For the experiments to follow it was decided that pathogenic anaerobes should be chosen on the basis of their mode of attack on the body and the frequency with which they occur in nature. Clostridium tetani, Clostridium septique and Clostridium welchii were chosen. Clostridium tetani remains localized in the tissues and kills entirely by virtue of its toxin. Clostridium welchii and Clostridium septique invade the tissues. Clostridium septique may be found in large numbers in the pericardial and peritoneal cavities after fatal infection, and these infections are always characterized by dark red muscles and edema. In infections caused by Clostridium welchii the muscles are pale and spongy as the result of gas formation. An important characteristic of the clostridia which is not often appreciated is that all the pathogenic members are able to form spores in the animal body (Topley and Wilson,[14] p. 672).

In order to check the technic used and to make the experiments comparable to those of other workers, several different kinds of bacteria have been used as controls. In certain instances Bacillus anthracis (a spore-forming aerobe), Staphylococcus aureus, Corynebacterium diphtheriae, Escherichia coli and Eberthella typhi were used. These include representatives of both the gram-positive and the gram-negative nonsporulating bacteria.

INTRODUCTION TO METHODS USED FOR TESTING THE MERCURIALS FOR THE STERILIZATION OF INSTRUMENTS

The opinion regarding the evaluation of disinfectants is divided into two more or less distinct groups: those who would place every confidence in the results of some laboratory tests and those who accept only clinical data; that is, whether the agent actually works in practice. A far greater number of physicians fall into the latter class and there is much to be said in favor of such an opinion. Garrod (1935) has well stated: "It is customary to deride laboratory conditions as [being] too far removed from those of practice to afford significant results; the truth is that practical conditions can be imitated closely and in almost every particular. The virtue of a test may in fact be held to depend largely on how far it achieves this, and the whole art of devising it consists in securing the necessary conditions without sacrifice of uniformity."

If one attempts to evaluate chemical agents for use on the skin or mucous membrane, to act as either antiseptics or disinfectants, many factors at once present themselves which tend to make it impossible to reproduce actual uniform conditions. Among these factors

10. Patterson, A. M.: Meaning of "Antiseptic," "Disinfectant" and Related Words, Am. J. Pub. Health **22**: 465 (May) 1932.

11. Abbott, A. C.: Corrosive Sublimate as a Disinfectant Against the Staphylococcus Pyogenes Aureus, Bull. Johns Hopkins Hosp. **2**: 50, 1891.

12. At this point, owing to lack of space, a section has been omitted containing a review of the literature concerning theories of the mechanism of killing by the mercurials, previous work on the antibacterial activity of mercurials and methods of testing their bactericidal action for the sterilization of instruments. A short review of the literature relative to the instances of anaerobic infection traceable directly to faulty sterilization of instruments is also included. These sections may be obtained from the author in a special reprint, together with a supplementary bibliography.

13. Roberts, Kingsley; Johnson, W. W., and Bruckner, Helen S.: The Aseptic Peritoneal Cavity—A Misnomer, Surg., Gynec. & Obst. **57**: 752 (Dec.) 1933.

14. Topley, W. W. C., and Wilson, G. S.: The Principles of Bacteriology and Immunity, ed. 2, Baltimore, William Wood & Co., 1936.

tissue permeability, individual variation in the animals, including resistance, drug sensitiveness and many other variants, become apparent if one attempts such tests. In testing these chemical agents for the sterilization of instruments, however, there is no reason why the actual conditions cannot be reproduced to the finest detail. The procedure is an entirely in vitro one with none of the variable elements of in vivo tests entering in. Since this is true there is no reason why the standard method for testing such chemicals should be based on any type of test other than one which exactly reproduces the condition under which the chemical is to be used.

In order to make the proper approach to the problem, it was thought wise to secure some reliable information concerning the actual use of these mercurials in the "cold sterilization" of instruments. Since the larger part of the surgery done by physicians is carried out in hospitals where steam sterilization is accessible, chemical solutions are not used to the extent that they are in the dental field, where very little surgery is done in hospitals. Practically every dental surgeon must provide for the sterilization of his own instruments.

DENTAL QUESTIONNAIRE TO DETERMINE ACTUAL CONDITIONS OF USE OF THE MERCURIALS

Before attempting a study of the antibacterial effects of the organic mercurials used for disinfection of instruments it was necessary to know to what extent these substances were used, the treatment of the instruments before and after attempting sterilization and how long they were left in the solution before being considered safe for use. With the aid of the secretary of the Council on Dental Therapeutics of the American Dental Association, a questionnaire was prepared and sent to all class A and B dental schools in this country and the following dental clinics: Mayo Clinic, Section on Dental Surgery, Rochester, Minn.; University of Chicago, Zeller Foundation Clinic, Chicago; the Forsyth Dental Infirmary for Children, Boston, and the Murray and Leonie Guggenheim Dental Clinic, New York.

In addition, the questionnaire was sent to a representative group of individual dentists over the country, some with very large practices and others with comparatively few patients. Although only sixty-five questionnaires were sent out, the answers represent a cross section of dental practices, since all of the dental schools are included.

Much thought was given to framing the questions in order that they might be clearly understood and so that the answers might be comparable. In view of the definitions given earlier in this paper, some question arose as to the proper word to be used in connection with the treatment of the instruments. Disinfection more adequately describes the actual accomplishment in most cases, but at the time this questionnaire was circulated practically all the commercial solutions carried the phrase "for the sterilization of instruments." A large number of the publications on the subject deal with the chemical sterilization, or chemical agents used for the sterilization, of instruments. Seventy-one per cent of the dentists advocated the use of chemical agents for the sterilization of some instruments. These were usually cutting instruments, scalpels, nerve broaches, tissue shears or instruments made of rubber or other material which would be damaged by boiling.

Sixty-three per cent of those making use of some chemical agent for sterilization use a mercurial. Metaphen, potassium mercuric iodide, merax, mercresin, mercarbolide and merthiolate were the mercurials used. Almost 50 per cent of those using a mercurial used metaphen germicidal solution (1:2,500).

Two of the factors known to influence the chemical disinfection of instruments are the preliminary treatment the instruments receive and the length of time they are allowed to remain in the solution. According to the replies, the time elapsing after the instrument was used until it was placed in the solution ranged from immediately after use to twenty-four hours or until the instrument was needed. The object of this question was to determine whether enough time elapsed for the blood and saliva to dry. In those instances the instruments would be much more difficult to disinfect. Practically all of those suggesting the use of any chemical agent thought it advisable to wash the instruments before placing them in the chemical solution. Several scrubbed with a brush or other scrubbing agent and a few used scrubbing with soap.

There was a great variation in the length of time the instruments were left in the solution, the time varying from one minute to four hours. Almost every minute up to thirty was suggested as the minimum before the instruments were considered safe to use. Sixty per cent of those answering this question considered a period between ten and thirty minutes as the minimum time for sterilization. At the completion of the sterilization 45 per cent suggested drying on a sterile towel and placing in cabinets before use. The other treatments suggested were rinses in various sterile solutions, saline solutions, boric acid, distilled water or alcohol and drying in air.

Regardless of the value of a questionnaire as a means of obtaining reliable information, this one served to furnish the names of the mercurials actually being used, fixed the maximum and minimum time limits and stated the condition of the instruments when placed in the solutions. This information was necessary in designing experiments to simulate actual conditions of use.

MERCURIALS USED IN THE EXPERIMENTAL WORK

The list of mercurials to be used in the experimental work was made up of all those mercurials named in the answers to the dental questionnaire together with those mentioned as agents which might be used as antiseptics or disinfectants in the 1937 edition of New and Nonofficial Remedies. Included are a few new ones which have not been submitted to the Council on Pharmacy and Chemistry or at least have not been accepted at the present date. Some of the mercurials, owing to their dye content or for other reasons, are not suitable for use on instruments and are not promoted for such purposes but have been included because they represent different types of the organic mercurial compounds. Several inorganic compounds have been included to act as controls and some because they are still being employed to a large extent for the disinfection of instruments.

The mercurials used are shown in table 1. The information in this table has been derived from various sources: manufacturers, publications and in some instances consulting chemists. The material will be of value to those unfamiliar with the trade names and to persons wishing to make chemical comparisons.

The chemicals for the most part were secured from the secretary of the Council on Pharmacy and Chem-

istry. In some cases the products were secured directly from the manufacturer and in others they were purchased on the open market.

Since it is not my purpose in this work to compare the efficiency of the various preparations except as to whether they are capable of accomplishing complete sterilization, no attempt has been made to keep the dilutions of the different mercurials constant. The rule generally followed was to use the dilution suggested for the sterilization of instruments or, if the product was not advocated for this purpose, the dilution used was that mentioned for disinfecting the skin or wounds.

In the case of the proprietary mercurials, the solutions were obtained in original packages, since in several instances other chemicals were incorporated to keep the mercurial in solution, to aid in penetration or to prevent rusting of the instruments. In certain instances they are obtainable only in solution form. The nonproprietary chemicals were made up in accordance with suggested directions for use. With some of these it was necessary to make fresh solutions often; with others, large amounts could be made up and kept in glass stoppered bottles in the dark. In every case more than one lot was tested with each organism.

Although it has been shown by Moll,[15] Joachimoglu [16] and others that the reaction (p_H) greatly affects the bactericidal action of the mercurials on spores, no attempt has been made in the experimental work to adjust the p_H. The stock solutions were used as they came from the manufacturer, since it was desired to test the solutions as obtainable by the physician. It was assumed that the solutions on the market would be of the optimal p_H for the maximum killing effect. In the few cases in which I made the solutions, unbuffered distilled water was used. The p_H of the various solutions was found to be between 3.5 and 10.5, and stock solutions of the different mercurials varied little from lot to lot.

EXPERIMENTAL

Method Used to Obtain Spores for the Experimental Work.—Before I began the actual experiments it was necessary for me to have spore suspensions of the various anaerobes in pure culture. One serious source of error in testing disinfectants with spore-forming organisms has been that the method of cultivation before the test has not been conducive to spore formation, with the result that the tests have simply been made on vegetative forms which were no more resistant than staphylococci or other vegetative organisms. An interesting example of this has been found in securing information on the organic mercurials from the manufacturers. A letter was sent to each of the manufacturers of mercurials asking for information on their product, with special regard to its efficiency as an agent for sterilizing instruments. One of the manufacturers in answer wrote a letter including protocols of experiments showing that its particular product was very effective for killing Clostridium welchii. The exact words were " . . . is very effective for the sterilization of instruments. This statement is based on experiments which showed that surgical instruments contaminated with blood and three representative organisms such as Staph. aureus, B. coli and the spore-bearing B. welchii were sterilized in 5 minutes or less."

On close examination of the protocols it was suspected that the organisms had been grown in beef infusion broth containing dextrose in order to get a heavy suspension for the test. Clostridium welchii does not form spores in the presence of this carbohydrate.[14] For confirmation, a culture of the strain used was obtained from the company and cultural tests showed no spores to be formed in the medium as used by the manufacturer. Thus it was necessary before the experiments were attempted to have a method of cultivation for each of the anaerobes used to insure adequate spore formation.[17]

Experiments with Dental Burs.—As a result of the information obtained in the dental questionnaire, the following experiments were made. They follow in every detail the methods used by the physician or dentist in "sterilizing" his instruments. These experiments were made to determine whether or not the mercurials under actual conditions of use were capable of sterilizing the instruments when spores of some of the pathogenic anaerobes were used as the test organism. I do not claim originality for this type of test. Practically every hospital in which infection has occurred and the instruments were suspected has called on its bacteriologic laboratory to make just such tests as these. The one object in this work has been to conduct the tests so that in case the organisms had not been killed they would have had the proper conditions for growth.

For the first series of experiments dental burs [18] were sterilized in a Petri dish in the hot air oven. These burs were removed with aseptic precautions and the serrated cutting edges dipped in defibrinated blood to which had been added spores of one of the test organisms. The burs were then placed upright in holes in a rack made to fit inside a Petri dish. The burs were covered by inverting a Spray dish over them. This whole assembly had previously been sterilized in the hot air oven. The transfer and dipping of the burs were accomplished with the aid of a pair of forceps previously sterilized and flamed between transfers.[19] The contaminated burs then represented the contaminated instruments as they came from a patient's mouth, provided there had been loss of blood and the contaminating organism had been present. The burs in the inverted Spray dish were left at room temperature for varying lengths of time before being placed in the chemical disinfectant. One set was washed immediately (five minutes) after being contaminated and placed in the disinfectant. Sets of burs, that is, one for each organism, were placed in the disinfectant after fifteen minutes, thirty minutes, one hour, four hours and twenty-four hours. This was to determine whether or not it made any difference at what time after use the instruments were placed in the disinfectant. It was thought that the drying of the blood might make mechanical cleansing more difficult and thus affect the sterilization.

Since most of the dentists thought it advisable to wash the instruments and some even to scrub with a brush before placing them in the "germicidal" solution, it was decided to vary this procedure. Some sets of instruments were not rinsed at all, others were rinsed

15. Moll, T.: Untersuchungen über die Wirksamkeit einiger chemischer Desinfektionsmittel auf Tetanussporen, Centralbl. f. Bakt. **84:** 416, 1920.

16. Joachimoglu, G.: Ueber den Einfluss der Wasserstoffionenkonzentrationen auf die antiseptische Wirkung des Sublimats, Biochem. Ztschr. **134:** 489-492, 1923.

17. The technic for obtaining spore suspensions of the several organisms is given in the special reprint.

18. Dental burs for this work were furnished by the Ransom and Randolph Company, Toledo, Ohio.

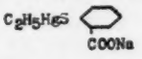
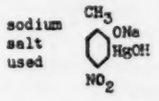
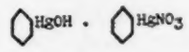
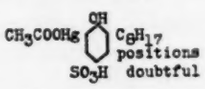
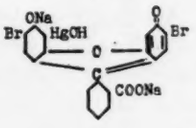
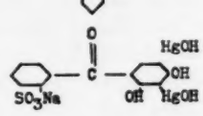
19. Hill, H. B.: Sterilizing Instruments During Bacteriological Autopsy Work, J. Applied Micr. **3:** 964, 1900.

in sterile tap water and still others were scrubbed until apparently clean with a sterile brush and water.

Although the answers to the questionnaire placed the time for sterilization in the chemical solutions from one minute to four hours, it was decided to use as the minimum time ten minutes. This was the minimum time suggested by some of the manufacturers for the sterilization of instruments. In addition, sets of contaminated burs were allowed to remain in the various solution of potassium mercuric iodide (Parke-Davis germicidal disks). This work was done in 1936, and these were the mercurials which were being or had been used for sterilization of instruments by dentists and dental clinics in Baltimore.

Although this work with dental burs represents seven months of experimental work and sixty complete experiments, a tabulation of the results would be of little value, for in each instance growth was obtained

TABLE 1.—*Mercurials Used in the Experimental Work*

Name	Manufacturer	Chemical Name	Mercury Content	Structural Formula*	Empirical Formula	Type	Comment	*pH*	Concentration of Type Used
Merthiolate	Eli Lilly & Co.	Sodium salt of ethyl mercuri thiosalicylic acid	49%		$C_9H_9O_2S\ Hg\ Na$	$R_1Hg\ S\ R_2$	Where R_1 and R_2 are different organic radicals	9.8	1:1,000 isotonic solution
Metaphen	Abbott Laboratories	Anhydride of 4,nitro-5-hydroxy mercuri ortho cresol	56-57%		$C_7H_3O_4Hg\ N$	R Hg X	.....	10.5	1:2,500 aqueous germicidal solution
Merphenyl nitrate	The Hamilton Laboratories	Phenyl mercuric nitrate (basic)	63%		C_6H_5HgOH, $C_6H_5HgNO_3$	R Hg X	Where R is an organic and X is an inorganic radical	4.2	1:1,500 boric acid solution
Mercarbolide	The Upjohn Co.	Ortho hydroxy phenyl mercury bichloride	60.95%		$C_6H_5O\ HgCl$	R Hg X	.....	6.5	1:1,000 aqueous solution
Mercresin	The Upjohn Co.	Not a chemical entity		A mixture of mercarbolide and five isomeric amyl ortho cresols	C_6H_3—OH, C_5H_{11}	CH_3	.....	5.4	Tincture (only form available)
Mertoxol	McKesson & Robbins, Inc.	Acetoxy mercuri 2-ethyl-hexyl-phenol sulfonic acid	40%		$C_{16}H_{24}O_6S\ Hg$	$R_1Hg\ O\ R_2$	.....	3.5	1:1,000 isotonic solution
Mercurochrome	Hynson, Westcott & Dunning	Sodium salt of di-brom hydroxy mercuri fluorescein	24-26%		$C_{10}H_8O_5Br_2HgNa_2$	$R_1Hg\ X$	.....	9.1	1:50 aqueous solution
Meroxyl	Hynson, Westcott & Dunning	Sodium salt of 2-4 di hydroxy-3-5 di hydroxy-mercury benzophenone 2' sulfonic acid	26-29%		$C_{13}H_9O_8Hg_2SNa$	R_1 —HgX, —HgX	.....	7.1	1:200 stabilized aqueous
Mercury oxycyanide	Nonproprietary	.....	85.5%	.....	$Hg(CN)_2.HgO$	Inorganic	A basic mercuric salt of hydrocyanic acid	9.1	1:6,000 aqueous
Mercuric cyanide	Nonproprietary	.....	83.3%	.....	$Hg(CN)_2$	Inorganic		6.2	1:1,000 aqueous
Potassium mercuric iodide	Nonproprietary	.....	25.5%	.....	$K_2Hg\ I_4$	Inorganic	A complex salt formed from 1 mole of HgI_2 and 2 moles of KI	9.2	1:1,000 aqueous
Mercury chloride	Nonproprietary	Mercuric chloride, "corrosive sublimate"	83.3 %	.....	$HgCl_2$	Inorganic	.....	5.9	1:1,000 aqueous

* The positions of some of the groups are doubtful. For source of information see text.

mercurials for periods of thirty minutes, one hour and twenty-four hours. Immediately after being removed from the sterilizing solutions the burs were placed in 40 cc. of 1 per cent sodium thiosulfate for twenty-four hours to neutralize any of the mercurial which might be present, as suggested by Meleney and Chatfield.[7] The burs were removed from this neutralizer, washed in 40 cc. of distilled water and transferred to infusion broth (40 cc.). They were then incubated in an anaerobe jar and removed when growth was noted. In instances in which growth was found, the organisms were identified to make sure that they were the same with which the bur had originally been contaminated.

The mercurials used were merthiolate 1:1,000, metaphen germicidal solution, mercresin and a 1:5,000 even after twenty-four hours' exposure to the disinfectant when the spores of any of the following organisms were used: Clostridium sporogenes, Clostridium septique, Clostridium tetani, Clostridium welchii and Bacillus anthracis.

The technic in these sixty experiments was varied so that some of the experiments simulated every possible combination suggested or actually used by the dentists.

The mixture of the organisms with blood approaches conditions which would be encountered in surgical practice.

Since in dental practice the instruments are not exposed to sodium thiosulfate, it was decided to repeat some of the experiments and omit this treatment.

The burs were rinsed in disilled water after remaining in the mercurials for one hour and for twenty-four hours respectively. They were placed in broth, and growth of the test organisms was obtained in every instance. Mead [20] found metaphen incapable of killing Bacillus anthracis and Bacillus subtilis spores in one hour. He failed, however, to obtain growth after one and one-half hours. His method was to inoculate agar plates from the instruments after rinsing off the excess germicide. He incubated his cultures only forty-eight hours before making readings. Burke, Sprague and Barnes [21] have shown that this incubation period is not sufficient. Meleney and Chatfield [7] have shown that organisms which have been treated with a disinfectant often do not grow out until the fifteenth day, with a maximum number growing out on the thirteenth day.

It is also to be expected that the practice of placing the instrument in the broth would yield a much higher percentage of positive results than that of simply dipping the instruments into melted agar. In actual practice the instruments might be forced into the tissues, and particles in crevices of the instrument would be removed which might not be dislodged by a simple dipping into agar.

EXPERIMENTS WITH DETACHABLE SURGICAL BLADES [22]

Dental burs with deep grooves and serrated edges were chosen because they presented lodging places for bacteria such as would also be found in joints of hinged instruments. This would make mechanical cleansing more difficult and would tax the germicide to a greater extent. The choice of these rough burs gave no idea what the value of such solutions might be in the case of smooth instruments such as scalpels. For this work detachable surgical blades were used. New blades from which the grease had been removed and those from which it had not been removed were used. These blades were used because they could be submerged in the medium and incubated for the duration of the test. The experiments with these instruments were made along with the dental burs, and in no instance were the results different. That is, growth was obtained in every instance. The conditions of testing and the mercurials used were the same as for the dental burs.

Two possible sources of error in this type of test are to be noted. In these experiments the contaminating blood mixture had been made with defibrinated blood. The contaminating mixture should have been made with whole blood, for the bacteria would then have been entangled in the fibrin and might have been more difficult to remove from the instruments. In actual practice the surgeons' blades are affixed in the handle and many crevices are formed which fill with pus, blood and exudate of various kinds, and, if actual conditions were to be approached, the blades should have been affixed to handles. Since positive results were obtained with the smooth blades and defibrinated blood, these factors are minimized; but had the organisms been killed in any instance these would have been very important factors and should be borne in mind in experiments of this type.

After studying the results of the experiments with burs and detachable blades it was realized that, although the experiments reproduced in detail the methods actually employed in chemically "sterilizing" instruments, certain bacteriologic technic was not above criticism for reasons to be described later, and perhaps a true picture of the ability of the mercurial disinfectants had not been obtained. The technic of a group of experiments was outlined so that the action of the mercurials on the spores of several organisms could be tested. These experiments were designed to determine the action of the mercurials not on spores entrapped in blood or dried in films in crevices surrounded by protein but naked spores in a large excess of the mercurial. The greatest attention was paid to bacteriologic technic, so that ideal conditions for killing and no chance of accidental contamination would exist.

DEVELOPMENT OF AN EFFICIENT CENTRIFUGE TECHNIC FOR TESTING MERCURIALS

Are the organic mercurials, under ideal conditions, capable of killing or rendering nonviable the spores of anaerobes? With this question in mind the following experimental work was undertaken. The technic was improved from time to time and these improvements are noted in the text.

Ditthorn and Bartel [23] described what they term a more exact method for evaluating disinfectants. Staphylococcus aureus was the only organism tested by these workers, and although *Chemical Abstracts* in reporting this work makes the statement that the authors used the method for "determining the value of the disinfectant in killing spore suspensions," no mention of any sporulating organism could be found in the original publication.

My first experiments using a centrifuge technic were made before I became familiar with the previously mentioned work of Ditthorn and Bartel, but the method used differed in only a few respects. Cultures of Clostridium sporogenes, Clostridium tetani, Clostridium welchii and Bacillus anthracis were grown on agar by previously described methods which insured spore formation. The spores were washed twice with distilled water, which left only a small sediment of bacteria on the bottom of a 15 cc. centrifuge tube. This washing was done to get rid of any toxin and soluble organic matter that might have been present. The tubes containing the spores were filled to the 15 cc. mark and, by means of a very fine capillary pipet, the organisms were mixed with the disinfectant. Metaphen germicidal solution and merthiolate were the only mercurials used in these preliminary experiments. The mercurial spore suspension was allowed to stand for fifty minutes and centrifuged ten minutes (one hour total). The disinfectant was decanted and the treated organisms were washed twice. The anaerobic organisms were transferred to cooked meat medium under petrolatum by a technic described by Brown [24] for preventing the organisms from becoming covered with petrolatum and thus preventing growth. The spores of Bacillus anthracis that had been treated by this method were streaked out on agar and planted into serum broth as suggested by Süpfle and Degeler [25] in order to insure growth of anthrax spores which had been treated with

20. Mead, S. V.: Sterilization for Surgery of the Mouth, Internat. J. Orthodontia **16**: 1097 (Oct.), 1215 (Nov.), 1317 (Dec.) 1930.

21. Burke, V.; Sprague, A., and Barnes, L.: Dormancy in Bacteria, J. Infect. Dis. **36**: 555-560 (June) 1925.

22. These blades were furnished for this work by the Surgical Blade Division of the American Safety Razor Corporation, Brooklyn.

23. Ditthorn, F., and Bartel, M.: Experiments to Determine a More Exact Method for the Valuation of Disinfectants, Disinfektion **8**: 62-66, 1923; abstr. Chem. Abstr. **18**: 1314, 1924.

24. Brown, J. H.: The Vaseline Tube and Syringe Method of Micro Gas Analysis of Bacterial Cultures, J. Exper. Med. **35**: 667 (May) 1922.

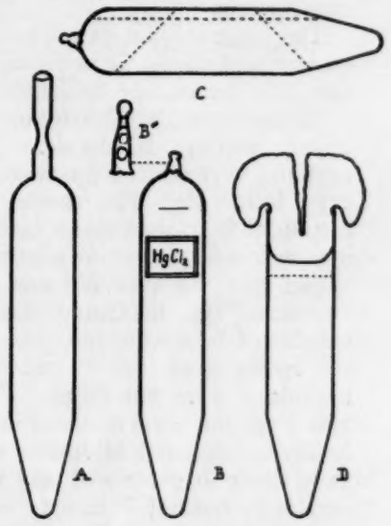
25. Süpfle, K., and Degeler, A.: Die Bedeutung optimaler Nähoböden zur Nachkultur bei der Prüfung von Desinfektionsverfahren, Arch. f. Hyg. **85**: 189, 1916.

disinfectants. All of the cultures in cooked meat and also the serum broth contained viable spores. Since it was possible that the mercurials might have affected the organisms in such a way that although it was possible to recover them in culture mediums they might have no longer been capable of producing disease, guinea pigs were inoculated with 0.5 cc. of the final sediment diluted to 1 cc. at the same time the cooked meat and serum broth were inoculated. Since it was known that the strains of Clostridium welchii and Clostridium sporogenes were nonpathogenic for guinea pigs, these organisms were not used in the animal section of this experiment. One-tenth cc. of 1 : 20 lactic acid was injected along with the tetanus suspension to insure the proper necrosis for infection. The anthrax suspension was injected subcutaneously in the left thigh. The guinea pig inoculated with the untreated anthrax suspension (control) died on the second day; the metaphen and merthiolate treated spores caused death on the third day. The tetanus control and the two animals injected with treated organisms all died on the fourth day after injection.

At this point a critical study of the technic was made and several errors were found. No technic is satisfactory in which there is a possibility that some of the organisms or spores may escape the action of the disinfectant entirely or for even a part of the supposed period of action. In suspension experiments of any type in which the organisms are placed in the disinfectant by means of a pipet, or in the case of the foregoing experiment in which the organisms were already in the centrifuge tube, there are many chances that there will be some bacteria not touched by the chemical agent, or at least not covered by the disinfectant for the full length of the desired period of exposure. This is true even though the suspension is made in one tube and transferred to another tube. Although theoretically possible, I doubt whether one can transfer such a suspension without some of it reaching a point on the tube at which it will not be entirely covered for the duration of the test. The "ringing effect" is also to be considered. That is, the rings left on the test tube as the liquid evaporates may leave a ring of bacteria on the surface of the glass well out of reach of the chemical being tested. This is very important in experiments in which the mercurials are left for as long as twenty-four hours, as in the case of some of the previous tests. This ringing is very noticeable in testing tinctures or solutions containing alcohol such as mercresin. No suspension experiment in which this type of mercurial is being tested can be considered correct unless this ringing factor has been taken into consideration.

To eliminate this source of error, some type of tube which could be sealed off in the flame was sought. If the suspension could be sealed in the proper type of tube and rotated in such a manner that the entire surface would be wetted for the period of exposure to the chemical agent, then this error would have been eliminated. After attempting to seal test tubes off in the flame uniformly, I decided that probably some ampule already on the market might be satisfactory. After trying several types of tubes I found the Judd and Simon [26] modification of the Keidel tube. Tube *A* shown in the accompanying illustration offers several advantages. It has a capacity of 50 cc., which allows a large volume of disinfectant to be used with an insignificant volume of spores. The neck of the tube is already constricted and ready for sealing in the flame. The tube is so constructed that it has a centrifuge bottom and, by cutting the tube off with a hot wire and inserting a sterile cotton plug from a test tube of the same size, one has an ideal centrifuge tube for washing the bacteria. This eliminates another source of error in that it is not necessary to transfer the organisms from the time they are exposed to the disinfectant until they are planted into the medium. The point (bottom) of the tube is not sufficiently small to prevent free flow when the tube is rotated.

Since apparently none of the mercurials tested in the earlier work were capable of killing the spores on short contact, it was necessary to have a machine to rotate the tubes satisfactorily over long periods of time. An off-center cam arrangement was made so that when the tubes were placed on it horizontally they would be entirely wetted in going through each cycle. The dotted lines in *C* show the extremes reached by the meniscus in traveling this cycle. The speed of the motor was set so that eighty complete cycles a minute were made. This was fast enough so that there was no chance for drying in any section of the tube. The tubes were rotated for twenty-three hours. About thirty minutes was required to inoculate from eight to twelve tubes and seal them in the flame before placing them on the machine, and thirty minutes was required for the first centrifuging, so that a total of twenty-four hours elapsed from the time the mercurial came in contact with the spores until it was removed.[27]



A, Keidel tube (50 cc.) as described by Judd and Simon. *B*, tube *A* sealed off properly and ready to be placed on rocking machine. *B'*, improper way of sealing tube; allows collection of air in neck of tube. *C*, tube *B* in horizontal position as placed on rocking machine. Dotted lines show changing positions of meniscus as tube is rocked, demonstrating that the entire tube is wetted during each cycle of the machine. *D*, tube *B* with top removed. Note divided cotton plug.

The spore suspensions of the anaerobes are made to contain approximately 330,000,000 viable spores per cubic centimeter. One cc. of this suspension is placed in the Keidel tube with 40 cc. of the mercurial to be tested and the tube sealed and placed on the rocking machine. After the tubes had been removed from this machine and centrifuged, a filed line was made just above the label, as shown in *B*, and the tubes were opened by removing the top. All the mercurial but about 0.6 cc. can be decanted or pipetted off without disturbing the sediment. The remaining 0.6 cc. is thoroughly mixed with the sediment by means of a pipet, and about 0.2 cc. is removed for animal inoculation. One loop of the spore-mercurial mixture is planted in an appropriate medium and incubated. Forty cc. of

26. Judd, C. C. W., and Simon, C. E.: The Vacuum Tube of Keidel, as Applied to Blood Culture Work, J. A. M. A. **64**: 822 (March 6) 1915.

27. The complete technic is available in the special reprint. Its great detail was considered inadvisable for a clinical publication of this work, and it has been condensed here.

sterile distilled water is added and the organisms are resuspended by washing up and down several times with a very fine capillary pipet. The tube is then plugged and centrifuged. This process is repeated three times, making a total of four washings. Although there is practically no turbidity in the final washing, when the sediment is diluted to 0.4 cc. a slight turbidity will remain, indicating the presence of organisms.

The technic in general has been to inoculate the proper recovery medium; that is, a medium which is ideal for the development of the spores if they have not been killed. In addition, mice have been inoculated to see whether or not the spores have been rendered noninfectious if they have not been killed. Representative results are given in table 2 and in most cases the protocols were repeated twice, making three sets of experiments.

The large amount of material in table 2 may appear quite complicated. It is hoped that this short explanation will obviate any difficulties:

As an example, Clostridium septique is considered under mercury bichloride. Spores of Clostridium septique were treated for twenty-four hours with mercury bichloride. The spores still suspended in the mercurial were used as an inoculum and were injected into mice and planted in a culture medium. Column 3 shows that the mice did not die even at the end of fourteen days, indicating that the spores were not capable of producing infection. Column 4 shows that the spores grew out in one day, indicating that the organisms were not killed. The results in column 5 and 6 are the same as those in 3 and 4; the inoculum, however, consisted of spores which had been washed four times to get rid of any mercurial present. The results in column 7 under "inoculum: treated spores in mercurial plus lactic acid" indicate that when the spores were injected along with lactic acid they were capable of producing infection and killing the mice. Column 8 shows that Clostridium septique could be recovered by cultural methods. Columns 9 and 10 show results similar to columns 7 and 8.

COMMENT ON THE CENTRIFUGE EXPERIMENTS

If these mercurials had been bactericidal, it would have been necessary to make many additional tests in order to prove the ability of the organic mercurials to disinfect instruments. Tests in the presence of various body fluids would have been made. Tests for organisms dried in pus, whole blood, saliva, bile or, in fact, any fluid which might be found about the body in operations would have been necessary. These tests would be of little value, since it was shown that the mercurials were unable to kill the spores even in twenty-four hours in the absence of body fluids and other factors which are known to decrease the bactericidal action of the mercurials.

One factor that may have influenced the results of these experiments is the production of sulfides in necrotic tissue. It is well known that sulfides are produced in decomposing tissue. Whether ammonium sulfide or hydrogen sulfide, it would tend to neutralize the mercurials on or about the spores. This will account for certain instances, not recorded in table 2, in which the animals died but no growth was obtained in the corresponding cultural experiments. The sulfide content of perspiration should be considered in experiments with mercurials. A polished coin will turn dark after being handled, owing to the action of sulfide from the skin. This may account for the failure of the mercurials to disinfect the skin in certain tests. Not all these mercurials are affected immediately by sulfides, but as the mercury ionizes the inactive sulfide is formed.

Topley and Wilson [14] (p. 698) state that the washed spores of Clostridium tetani are innocuous. Vaillard and Vincent [28] demonstrated that many millions of spores, when deprived of their toxin, could be introduced intramuscularly into guinea pigs without producing tetanus. Vaillard and Vincent found that if the tissues are injured in any way the spores will develop and tetanus will occur. A 22 gage needle was used for the injection in the present work and the mice usually struggled. This may account for tissue injury and subsequent tetanus infection in each instance with the washed spores. To preclude the possibility that the deaths were caused by the presence of a small quantity of tetanus toxin, as a control experiment some of the washed spores were further washed in an abundance of antitoxin and then in water. These were injected in the same manner as in the test, and death resulted. According to Topley and Wilson [14] (p. 698) tetanus toxin in a dose of 0.0001 cc. will kill a mouse. The design of this test makes it impossible for a toxin content of even 1:1,000,000,000 to be present. If the mercurial treatment is included, the spores were subjected to seven washings and dilution to 40 cc. It has also been shown by Van Ermengem [29] that salts of the heavy metals destroy some anaerobic toxins.

The observations of Moll [15] have been substantiated; that is, some of the mercurials are capable of affecting tetanus spores so that, although not actually killed, they are incapable of causing the death of the animals injected with them. In some instances it would seem that the washing process plays a greater role than the neutralizer in bringing about the recovery of the treated organisms.

Room temperature was used for all the experiments; it varied from 20 to 25 C. No experiments were made to determine the effect of a higher temperature for this is about average room temperature and these agents for "cold sterilization" are usually employed to avoid heating the instruments.

The twenty-four hour treatment period is about as long as could be conveniently employed and is much longer than is customarily used. A chemical agent which would require a longer period would not be practical, for many instruments are expensive and must be sterilized and reused several times in one day.

It is to be reiterated at this point that these experiments were not simply exposure experiments, made according to phenol coefficient methods or the string and bead technic, but were tests in which the organisms were sealed in with the disinfectant and constantly agitated to insure exposure of every organism to the disinfectant for the full period of twenty-four hours. The bacteriologic technic was designed to give accurate information on the one question Are the newer organic mercurials capable of killing the spores of anaerobes under the optimal conditions employed for sterilizing instruments? The answer, evident from a study of the tables, definitely indicates that none of the mercurials tested can be depended on to sterilize instruments in

28. Vaillard, L., and Vincent, H.: Contribution à l'étude du tétanos, Ann. Inst. Pasteur **5**: 1-39, 1891.
29. Van Ermengem, E.: Ueber einen neuen anaëroben Bacillus, Ztschr. f. Hyg. **26**: 34, 1897.

twenty-four hours even in the absence of organic matter and other factors known to decrease the activity of the mercurials.

SUMMARY

1. A review of the literature shows that claims are made that the various mercurials can be depended on to kill the spore-forming anaerobes.

2. A review of the various methods of testing indicates that in most instances bacteriologic technic has been violated or the tests used were not applicable to spore-forming organisms, so that the results cannot be depended on.

3. In a series of 120 surgical operations, bacteriologic examination of the cutting instruments after use revealed 12 per cent contaminated with spore-forming anaerobes. Eight per cent of the skin knives were found to be contaminated with Clostridium welchii or similar organisms.

4. A study of the mercurial solutions available, summarized in table 1, indicates that these mercurials are used in dilutions of from 1:50 to 1:6,000 and vary in p_H from 3.5 to 10.5. This work was not made for the purpose of comparing the different mercurials available but rather to determine their efficiency as germicides for sterilizing instruments. One cannot help noticing, however, that the commercial products with the highest and lowest p_H were in general the most active.

5. In a series of sixty experiments with dental burs and detachable surgical blades, none of the mercurials were found capable of sterilizing the instruments in twenty-four hours under actual conditions of use. Clostridium welchii, Clostridium tetani and Clostridium sporogenes were used as the test organisms.

6. In preliminary experiments according to the modified methods of Mueller and of Ditthorn and Bartel sources of error were found.

7. An improved centrifuge technic was developed to determine whether the mercurials under optimal conditions are capable of destroying spores of anaerobes. The outstanding features of this technic are as follows: A sealed tube is used in which the organisms are exposed to the chemical agent for twenty-four hours. During this time the mercurial spore mixture is agitated constantly to prevent evaporation "rings" and to insure complete wetting of the entire inner surface of the tube. Settling or layering of the organisms is also prevented. Animal inoculation as well as cultural tests were used to determine the efficiency of the various mercurials with this technic.

8. None of the mercurials were capable of killing the spores of Clostridium tetani or of making them innocuous. The work of Moll was substantiated, for in several instances typical symptoms of tetanus developed in the mice and the mice recovered. Contrary to the common belief, Clostridium tetani could be isolated from the site of injection in all the mice dying from tetanus.

9. In the majority of the cases the mercurials were incapable of killing the spores of Clostridium septique, Clostridium welchii or Bacillus anthracis, even in the

TABLE 2.—*Results of Mouse and Cultural Tests When Spores Treated with Mercurials Were Used*

		Inoculum: Treated Spores in Mercurial				Inoculum: Treated Spores Washed Four Times				Inoculum: Treated Spores in Mercurial + Lactic Acid				Inoculum: Treated Spores Washed Four Times + Lactic Acid			
Mercurials Tested	Organisms	Death*	Day	Growth†	Day	Death	Day	Growth	Day	Death	Day	Growth	Day	Death	Day	Growth	Day
Mercury bichloride 1:1,000	Clostridium tetani	+	2	+	2	+	2	+	2	+	2	+	2	+	2	+	2
	Cl. septique	—	14	+	1	—	14	+	1	+	1	+	1	+	1	+	1
	Cl. welchii	—	30	—	60	—	30	—	60	—	30	—	60	—	30	—	60
	Bacillus anthracis	—	30	+	1	—	30	+	10								
Mercurochrome 1:50	Cl. tetani	+	2	+	2	+	2	+	2	+	2	+	2	+	2	+	2
	Cl. septique	+	1	+	1	+	1	+	1	+	1	+	1	+	1	+	1
	Cl. welchii	—	30	+	1	—	30	+	1	—	30	+	1	—	30	+	1
	B. anthracis	+	3	+	1	+	3	+	6								
Merphenyl nitrate 1:1,500	Cl. tetani	+	1	+	2	+	1	+	2	Tetanus		+	2	Tetanus		+	2
	Cl. septique	—	14	+	1	—	14	+	1	+	1	+	1	+	1	+	1
	Cl. welchii	—	30	—	60	—	30	—	60	—	30	—	60	—	30	—	60
	B. anthracis	+	5	+	6	+	5	+	1								
Metaphen 1:2,500	Cl. tetani	Tetanus‡		+	2	Tetanus		+	2	+	4	+	2	+	3	+	2
	Cl. septique	—	14	+	1	—	14	+	1	+	1	+	1	+	1	+	1
	Cl. welchii	—	30	—	60	—	30	—	60	—	30	—	60	—	30	—	60
	B. anthracis	—	30	—	60	—	30	—	60								
Merthiolate 1:1,000	Cl. tetani	+	1	+	2	+	1	+	2	+	2	+	2	+	3	+	2
	Cl. septique	+	1	+	1	+	1	+	1	+	1	+	1	+	1	+	1
	Cl. welchii	—	30	+	2	—	30	+	2	—	30	+	2	—	30	+	2
	B. anthracis	+	4	+	6	+	3	+	1								
Mertoxol 1:1,000	Cl. tetani	+	3	+	2	+	3	+	2	Tetanus		+	2	Tetanus		+	2
	Cl. septique	—	14	+	1	—	14	+	1	+	2	+	1	+	2	+	1
	Cl. welchii	—	30	—	60	—	30	—	60	—	30	—	60	—	30	—	60
	B. anthracis	—	30	—	60	+	13	+	1								
Mercarbolide 1:1,000	Cl. tetani	+	1	+	2	+	1	+	2	+	2	+	2	+	3	+	2
	Cl. septique	—	14	+	1	—	14	+	1	+	2	+	1	+	1	+	1
	Cl. welchii	—	30	+	24	—	30	—	60	—	30	—	60	—	30	—	60
	B. anthracis	—	30	+	1	—	30	+	1								
Potassium mercuric iodide, 1:1,000	Cl. tetani	+	1	+	2	+	2	+	2	+	2	+	2	+	2	+	2
	Cl. septique	—	14	+	1	—	14	+	1	+	1	+	1	+	1	+	1
	Cl. welchii	—	30	+	2	—	30	+	2	—	30	+	2	—	30	+	2
	B. anthracis	—	30	+	1	—	30	+	1								
Meroxyl 1:200	Cl. tetani	+	1	+	2	+	1	+	2	+	1	+	2	+	2	+	2
	Cl. septique	+	1	+	1	+	1	+	1	+	1	+	1	+	1	+	1
	Cl. welchii	—	30	+	2	—	30	+	2	—	30	+	1	—	30	+	1
	B. anthracis	+	2	+	1	+	2	+	1								
Mercury cyanide 1:1,000	Cl. tetani	+	1	+	2	+	1	+	2	+	1	+	2	+	2	+	2
	Cl. septique	—	14	+	1	—	14	+	1	+	1	+	1	+	1	+	1
	Cl. welchii	—	30	+	2	—	30	+	2	—	30	+	2	—	30	+	2
	B. anthracis	—	30	+	1	—	30	+	1								

* + indicates not only death of the mouse but also characteristic autopsy results and positive cultures from the animal.
† + indicates not only growth but also identification of the organisms inoculated. The number indicates the day on which growth was first observed.
‡ In these instances the animals developed typical symptoms of tetanus but recovered.

absence of body fluids and under conditions optimal for the action of the chemical agents.

10. Cultural experiments indicate that some of the mercurials may affect the spores in such a way that, although not actually killed, they are no longer capable of producing infection.

11. The results of the cultural tests show that results based on a comparatively short incubation period are not reliable since, in some instances, the treated spores developed only after twenty-four days.

CONCLUSION

1. The conflicting reports in the literature regarding the germicidal efficiency of the mercurials may be explained by noting that the methods of testing, in most cases, are not applicable to spore-forming organisms, in particular those tests which do not differentiate between actual killing and bacteriostatic action.

2. It is to be concluded from the results of the tests described in this paper that none of the mercurials examined can be depended on to sterilize instruments when spore-forming organisms are present. The question of disinfection is quite another problem. In the case of Clostridium tetani none of the mercurials rendered these spores noninfectious after twenty-four hours of contact. The spores were still capable of infecting the mice and producing tetanus. The spores of Clostridium septique and Bacillus anthracis, however, could be rendered noninfectious in certain instances. That is, although it was possible to recover in these cases organisms in cultural experiments, they did not produce an infection when injected into animals.

3. To explain the ability of some of the mercurials to act as antiseptics is beyond the scope of this paper. However, their actual germicidal value for vegetative bacteria is questioned. After it was found that the mercurial solutions as commonly used are incapable of killing the spores of the pathogenic anaerobes in twenty-four hours, it was decided to determine their effect on some vegetative bacteria by the centrifuge method. Just as statements are made that some of these mercurials will kill spore-forming bacteria, some of the manufacturers claim that their particular product will kill vegetative bacteria in ten minutes. One of the mercurials used did not kill Staphylococcus aureus in thirty minutes, although no neutralizers or special recovery methods were used. Other vegetative bacteria were used and the results indicate that some method other than one based on phenol coefficient determination should be used to establish the ability of the mercurials to disinfect instruments.

4. Although it was found that the mercurials as available on the market are not germicidal for the pathogenic anaerobes, it is possible that one of the newer organic solvents, wetting agents or surface tension reductants might affect the spores in such a way that the mercurials would then be able to kill these organisms.

5. The method of testing used in the experimental work is not suggested as a standard method to be used for testing chemical agents for sterilizing instruments but is proposed as a method for determining the action of chemical agents on spores under the most favorable conditions. The object of the method is to eliminate all possible sources of error by insuring the action of the chemical on every spore for the full length of the period of exposure.

RECURRING ATLO-AXIAL DISLOCATION WITH REPEATED INVOLVEMENT OF THE CORD AND RECOVERY

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Between the atlas and the axis (first and second cervical vertebrae) there are three diarthroses. Two of these are lateral and have to do with articular processes, and the third is mesial. This mesial diarthrosis is between the posterior aspect of the anterior arch of the atlas (first cervical vertebra) and the anterior surface of the odontoid process of the axis (second cervical vertebra). Alinement between the atlas and the axis is maintained by the anterior and posterior atlo-axoid ligaments and by the transverse ligament of the atlas. This transverse ligament of the atlas is one of the most important structures in the body, for on its integrity one's life largely depends. It is attached on each end to a tubercle on the inner side of the lateral mass of the atlas, crosses the ring of this bone, dividing it into a small anterior portion for the odontoid process of the axis and a larger posterior portion for the spinal cord. If either the transverse ligament of the atlas or the odontoid process of the axis (dens) gives way, there is an anterior dislocation of the atlas on the axis. The pyramidal decussation lying just behind the odontoid process may be compressed with resulting paralysis of the extremities.

ATLO-AXIAL DISLOCATION

Dislocation of the atlas on the axis may be one of two types; spontaneous or traumatic.

Spontaneous Dislocation.—According to Watson Jones,[1] this condition is due to hyperemic decalcification of the atlas with loosening of the transverse ligament. This results from infections in the nasopharynx or elsewhere in the vicinity of the base of the skull. All cases have four features in common:

1. They occur most frequently during childhood.
2. They are preceded by inflammation anywhere in the upper cervical region.
3. There is a latent period of from seven to ten days between the time of the infection and the dislocation.
4. The part of the arch of the atlas nearest the infection is decalcified.

According to Woltman and Meyerding,[2] spontaneous atlo-axial dislocation may result in symptoms similar to those of cervical arthritis, pharyngeal abscess, meningitis, encephalitis, bulbar palsy, cerebellar tumor and myasthenia gravis.

Traumatic Dislocation.—Traumatic atlo-axial dislocation is usually due to a fracture of the odontoid process of the axis. This deprives the transverse ligament of the atlas of its anchorage and permits the atlas to slide anteriorly on the axis. The condition results from injuries to the neck, manipulative adjustments, convulsive seizures and birth injuries.

The symptoms of traumatic atlo-axial dislocation may be immediate or delayed. In cases in which the appearance of symptoms is delayed there may be a latent period of days, or even months or years. At the time of the injury the local symptoms may be absent or minimal and may disappear rapidly. Then, after the

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1. Jones, R. W.: J. Bone & Joint Surg. **16**: 30 (Jan.) 1934.
2. Woltman, H. W., and Meyerding, H. W.: S. Clin. North America **14**: 581 (June) 1934.

latent period, neurologic signs and symptoms develop. These frequently are obscure and progress very slowly. Cases reported by Schwarz and Wigton [3] show slowly developing symptoms, which usually are more pronounced on one side. In many cases both legs and one arm are involved (as in the case here reported) and the picture is one of a slowly developing spastic paralysis with or without sensory involvement. One patient presented himself with a spastic weakness of the legs. The cause of this was not suspected until several months later, when a roentgenogram of the spine showed a dislocation of the atlas on the axis. Careful interrogation of the patient disclosed the fact that many years previously he had injured his neck in a fall. At the time there were no immediate symptoms.

The reasons given by various authors for the appearance of symptoms after a prolonged latent period are redislocation, progressive dislocation, excessive callous formation, pachymeningitis and pressure myelitis, irritation of the cord due to abnormal motility, late developing osteomyelitis and adhesive arachnoiditis with calcification (arachnoiditis ossificans). Stookey [4] thought that the anchoring effect of the arachnoid on the spinal cord at one point and normal mobility of the rest of the cord produced chronic trauma of the cord with disturbance in cord conduction.

The only case found in the American literature that is similar to the one about to be reported is one described by Elliott and Sachs [5] in 1912:

A man aged 50 fell at the age of 18 and landed on the back of his head. For six months after this he was in bed and was unable to move his head from side to side. He recovered on rest and then served for five years in the army. A few years later he fell, striking his left shoulder, and four or five months after this he showed symptoms of a high transverse myelitis. These disappeared completely on rest. Five years later, following another minor injury, he had temporary paralysis of the legs, accompanied by urinary incontinence. Seven years later he sustained his fourth injury, which resulted in immediate paralysis of the right arm and leg, double incontinence, paresthesia of both legs and weakness of both arms. Roentgenograms showed marked displacement of the atlas on the axis. The patient lived for two years and died of sepsis and other complications. Postmortem examination showed atlo-axial dislocation with involvement of the cord.

REPORT OF CASE

This case, like the one just reviewed, is unusual in that the patient suffered numerous atlo-axial dislocations with consequent symptoms of involvement of the cord, followed each time by complete recovery:

K. R., a white man aged 34, was a periodic drinker to excess of beer. His family, past and medical histories were not relevant to this report. In 1925, while driving a car, he fell asleep and landed in a ditch, sustaining multiple lacerations about the chest, hands, face and head and an injury to the lower part of the back. As he remembers it, he was not able to move his arms or his legs for several days. He was told that he had a sprained back and he remained in bed for three weeks, after which he used crutches for six weeks. Recovery was complete.

About a year later the patient was in another automobile accident and the overturned car came to rest on his neck. His right arm and both legs were paralyzed for several weeks and it was necessary for him to be catheterized for some time after the accident. His neck was taped and he was told that he had torn some ligaments. In about two months he had completely recovered except that since then he has felt a twinge in the back of his neck and down the lower part of the spine every time he stumbles a bit or is jarred in any way.

In 1932 he again rolled over in a car and was unconscious for about fifteen minutes. When he came to he had some pain in the lower part of the back but was not hurt sufficiently to make it necessary for him to go to a hospital. He went to work as a farm hand but quit after two weeks because his back hurt him.

At 2 a. m., Oct. 22, 1936, the patient was admitted to the Ancker Hospital in St. Paul with an admitting room diagnosis of suspected tumor of the cervical cord. The notes are very sketchy, but it is stated that for two years he had been having bladder symptoms (nature not stated). October 21, after he retired a paralysis of the right arm and of both lower extremities developed. Superficial examination at the hospital showed hyperactivity of all tendon reflexes and bilateral ankle clonus but normal plantar responses. There was anesthesia of the right side of the body below the third cervical level and of both sides of the body from about the ninth dorsal segment down. The right arm and both lower extremities were paralyzed. At 5 p. m. October 22 the patient was able to move his left leg and close his right fist, the sensory pattern was the same as it had been on his admission to the hospital. The following day there was some return of motion in the paralyzed extremities. Roentgenograms of the lower part of the spine showed "negative lumbar spine and sacrum. Slight narrowing of the first lumbar vertebra, probably developmental unless due to an old slightly compressed fracture" (see first injury).

June 7, 1937, he was admitted to the Ancker Hospital in an intoxicated condition. He had been in an automobile accident but there had not been any serious injury so he did not remain for examination.

Some time later in June the patient was in another automobile accident and the front of his car was telescoped in such a way as to pin his neck against the back of the driver's seat. He was dazed but not unconscious. For about two days he bled from the mouth but at no time was he paralyzed.

October 12 the patient was feeling well until he stooped over to lock the door of his house before going to work. He felt a stinging sensation in the back of his neck and fell to the floor immediately. Whether or not he was unconscious cannot be determined. Three hours later his wife found him and reported that he could not move his legs or his right arm. He was put to bed and he vomited numerous times. The record shows that on the next day there was a spastic paraplegia with weakness of the right upper extremity. The chart does not indicate that a sensory examination was made at that time. I saw him in consultation October 24 and by that time some of the functions of the right arm had returned. There was sensory impairment below an indefinite level corresponding to about the second lumbar dermatome. The muscles of both lower extremities showed a slight spastic weakness, the tendon jerks were brisk and the plantar responses were not elicited. There was no involvement of the sphincters. Roentgenograms of the cervical spine showed an anterior dislocation of the atlas on the axis with fracture and some displacement of the odontoid process. One week later the right leg was stronger than the left, sensation was normal and both plantar responses had become flexor. A spinal tap was not performed because I wanted to avoid as much as possible all manipulation of the spine. Instead I advised orthopedic consultation and in November a fusion operation was done on the cervical spine by Dr. C. C. Chatterton of St. Paul. Aside from some minor episodes associated with his getting drunk and removing his orthopedic collar from time to time the patient has remained well and has not had a recurrence since the cervical spine became ankylosed.

SUMMARY

1. The transverse ligament of the atlas is one of the most important structures in the body because it maintains the alinement between the atlas and the axis. Dislocation of the atlas on the axis (atlo-axial dislocation) causes compression of the spinal cord with resulting symptoms.

3. Schwarz, G. A., and Wigton, R. S.: Fracture Dislocation in the Region of the Atlas and Axis with Consideration of Delayed Neurological Manifestations and Some Roentgenographic Features, Radiology **28**: 601-607 (May) 1937.

4. Stookey, Byron: Adhesive Spinal Arachnoiditis Simulating Cord Tumor, Tr. Am. Neurol. A., 1926, pp. 129-156; Arch. Neurol. & Psychiat. **17**: 151-178 (Feb.) 1927.

5. Elliott, G. R., and Sachs, Ernest: Observation on Fracture of the Odontoid Process of the Axis with Intermittent Pressure Paralysis, Ann. Surg. **56**: 876-882, 1912.

2. Atlo-axial dislocation may be spontaneous or traumatic.

(*a*) Spontaneous atlo-axial dislocation is due to hyperemic decalcification of the atlas with loosening of its transverse ligament. It follows infections about the nasopharynx and base of the skull.

(*b*) Traumatic atlo-axial dislocation may cause symptoms immediately or after a latent period of varying length.

3. In the case reported here the patient suffered a fracture of the odontoid process (dens) and subsequently had a number of atlo-axial dislocations with resulting symptoms of compression of the cord and recovery.

4. Only one similar case is found reported in the American literature.

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VESICULAR PHARYNGITIS AND STOMATITIS

AN UNUSUAL EPIDEMIC OF POSSIBLE HERPETIC ORIGIN

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During the months of July and August 1938 there was an epidemic of febrile vesicular pharyngitis and stomatitis in three of the summer camps located on the shores of a lake in central New Hampshire. The disease presented three distinctive clinical features: vesicular throat lesions, high infectivity and a benign, self-limited course. Since several consultants as well as ourselves had never encountered this disease, and a survey of the literature did not reveal a report of a similar epidemic, this presentation seems justified despite unavoidably meager laboratory studies. It is to be hoped that the disease may be more completely studied if and when it appears elsewhere.

COURSE OF THE EPIDEMIC

The camps involved in the epidemic will be designated as A, B and C. Camp A is a boys' camp with about 100 campers and thirty-five councilors and attendants. Camp B is a girls' camp and camp C a boys' camp; each accommodates about fifty campers and fifteen councilors and attendants.

In camp A the first cases appeared July 17 and the last case was diagnosed July 31. Although a self-imposed quarantine of the camp was instituted July 19 and all fresh cases were isolated as effectively as camp facilities permitted, the disease eventually developed in sixty-one campers, seven councilors, three Negro cooks and one white cook. The height of the epidemic was reached July 22, with thirteen new cases, and followed a week of almost continuous rainfall.

July 23 a councilor from nearby camp B presented characteristic throat lesions and was promptly isolated, and the camp was unofficially quarantined. Several evenings previously this councilor had visited an eating place frequented by councilors from camp A prior to their quarantine. August 1 three new cases were discovered; five others on August 14 brought the total in camp B to ten, as shown in the accompanying table. By this time the first case had appeared at camp C, at the opposite end of the lake; in the ensuing ten days prior to the close of this camp twenty-one cases in all developed. As in camp A, isolation of cases was ineffectual in checking the epidemic, which had not fully burned itself out by the close of the camp season.

There were 106 cases in the entire epidemic, including three cases outside the camps. So far as is known there were no cases resembling this infection in any of the other three boys' and three girls' camps bordering on the lake. The remaining population of the region consists of 5,000 inhabitants, approximately evenly divided between permanent and summer residents. One of our three outside cases occurred in a youth aged 19 who had had herpes zoster of the right lumbar region about three months previously. The second was in a girl aged 6 years living near camp C, and the third was in a woman aged 33 living near camp A. It is quite possible that there were additional outside cases which did not come to our attention; it is unlikely, however, that many cases in camps A, B and C were overlooked, since campers in whom the disease did not develop had their throats examined daily during the epidemic.

CLINICAL ASPECTS

The disease was characterized by a sudden onset with headache, malaise and a variable degree of sore throat and fever, but the most significant finding (present in all of the cases) was the appearance in the throat of one or more yellowish white, slightly raised vesicles 1 or 2 mm. in diameter, usually surrounded by an intense red areola. These lesions were most frequently found on the faucial pillars (anterior more often than posterior), on tonsillar tissue when present or on the soft palate. Many of the cases seen at camp C (but none in the other two camps) presented, as well, lesions on the buccal mucosa or on the gums near the dentogingival margins, and in one case on the under surface of the tongue. Only one or two lesions might appear in the entire course of the illness, or the entire visible pharynx might be studded with them. The lesions often occurred in small clusters, which later coalesced. In most instances the individual or coalescent vesicles ulcerated, leaving a shallow, punched out, grayish yellow crater measuring from 2 to 4 mm. in diameter; some lesions never ulcerated. The lesions disappeared in from five to ten days, usually outlasting the fever.

In a few of the earlier cases in camp A the mucosa adjacent to the vesicles became deeply injected and even hemorrhagic, with moderate edema, simulating the so-called streptococcic sore throat. In many cases there was swelling of lymphoid tissue in the tonsillar fossa. In a few cases in which the lesions were restricted to the tonsils the appearance resembled a follicular tonsillitis, but pus or caseous material could not be wiped from the tonsillar surface. In several cases marked edema caused the bulging of the fauces usually associated with peritonsillar abscess.

As already indicated, the usual complaints were headache, malaise, feverishness and sore throat. The soreness of the throat was usually not severe, and the symptom was more often brought out only on questioning. Moreover, there was no correlation between the appearance of the throat and the subjective complaints; several of the patients with marked ulceration had no soreness whatever. Dysphagia was rarely met, and no patient complained of hoarseness. The patients with lesions of the mouth as well as of the throat complained of soreness or burning of the mouth, tongue

or gums. In two or three cases the disease was ushered in with severe headache, which disappeared with the onset of fever; in one of these cases the headache lasted several days before fever and throat vesicles appeared.

The highest fever (not exceeding 104 F. in any of our cases) was usually attained on the first day of the illness but occasionally not until the second or third day. The throat lesions usually appeared with the rise in temperature, but occasionally there was no fever until a day or more after the lesions were detected. Conversely, in a few cases early in the epidemic fever preceded the appearance of vesicles by a day or two. The temperature typically remained elevated for from two to four days and then hovered slightly above normal for an additional three or four days. In a few cases the temperature returned promptly to normal after one or two days, only to show slight secondary rises on the fourth or fifth day but never equaling the previous febrile level. Some cases were afebrile throughout.

Physical examinations were consistently negative except for the condition in the throat. No cutaneous eruptions were noted. Rigidity of the neck or the Kernig sign was not elicited in any case. The spleen and liver were not felt nor was there any significant enlargement or abnormal tenderness of the lymph nodes. The ear drums were normal in all cases except two: one showed minimal injection of both drums, rapidly subsiding; the second showed marked injection of one drum, which also subsided rapidly. Atypical systolic cardiac murmurs were heard in three cases; these were said to have been noted before the boys entered camp. The highest pulse rate recorded was 120 beats per minute. In every case throughout the epidemic the lungs remained perfectly clear on physical examination. In two cases, moderate generalized abdominal pain was the initial complaint; abdominal examination, however, was negative and the pain disappeared within twenty-four hours.

EPIDEMIOLOGIC ASPECTS

Although the age incidence varied from 7 to 67 years, the disease appeared to have a predilection for the younger age groups, only fifteen of the 106 cases occurring in persons 18 years of age or over. These are roughly one fourth of the exposed adults, whereas the disease developed in about one half of the exposed campers. The adult members of the camp were probably exposed even more than the campers, since the care of the sick devolved on them. In general, the older the patient the milder was the constitutional reaction.

The maximum incubation period could be established on two patients at camp A. The first was a white youth aged 19, enlisted from the outside to help with the camp cooking; he had no contact with known active cases, but the infection developed five days after he entered camp. The second was a boy aged 10 years who was admitted as a camper (his parents fully aware of the risk) in the first week of the epidemic; the disease developed seven days later.

In view of the alleged relationship between certain herpetic infections and chickenpox, as well as the clinical resemblance of the vesicles to the enanthema of chickenpox, the previous histories of 157 campers were reviewed. The vesicular pharyngitis developed in seventy (or 56 per cent) of 124 campers who had had chickenpox and in eighteen (or 55 per cent) of the thirty-three who had not had chickenpox. Apparently previous infection with chickenpox bears no relationship to this type of pharyngitis.

It is noteworthy that during and shortly after this epidemic four cases of herpes zoster auricularis were encountered. Only one of these was in a camper, a boy aged 14 years in camp C who had herpes zoster auricularis beginning August 9 and in whom vesicular pharyngitis developed August 21. Cases occurred in two 16 year old school girls and a third in a woman aged 45. All of the patients bathed in the lake almost daily, but there was no direct contact between any two of them.

Four cases of mild conjunctivitis (so-called pink eye) appeared in camp A and two in camp C. This is regarded as no more than the usual camp incidence. Bacteriologic study of these cases was not undertaken. One patient at camp A had had bronchopneumonia three weeks before the onset of the epidemic, but examination of his lungs gave negative results and he was asymptomatic at least one week before the disease developed. There were no cases of anterior poliomyelitis or encephalitis in the neighborhood during or following this epidemic.

Calendar of New Admissions

Day of Month	July		August	
	Camp A	Camp B	Camp B	Camp C
1	..	..	3	..
2	..	..	..	..
3	..	..	1	..
4	..	..	..	..
5	..	..	..	..
6	..	..	..	..
7	..	..	..	..
8	..	..	..	..
9	..	..	..	..
10	..	..	..	..
11	..	..	..	..
12	..	..	..	..
13	..	..	..	1
14	..	..	5	..
15	..	..	..	..
16	..	..	..	2
17	2	..	..	3
18	2	..	..	1
19	6	..	..	1
20	5	..	..	4
21	3	..	..	4
22	13	..	..	3
23	9	1	..	2
24	11	..	..	..
25	3	..	..	..
26	5	..	..	..
27	4	..	..	..
28	1	..	..	..
29	4	..	..	..
30	3	..	..	..
31	1	..	..	..
Total cases	72		10	21

LABORATORY ASPECTS

Our laboratory studies were necessarily restricted. Leukocyte counts were made in twelve cases during the first three days of the disease and ranged between 5,500 and 11,000 cells per cubic millimeter. Urinalyses carried out in seventy-two cases during the height of the illness and two weeks after the cessation of symptoms were negative in respect to albuminuria, glycosuria and urinary sediment.

The local lesions in fifty-one cases were investigated bacteriologically with direct smears, cultures or both. In fifteen cases smears stained with gentian violet did not show sufficient numbers of spirochetes and fusiform bacilli to be diagnostic of Vincent's infection.[1] Seventeen of twenty cultures carried out in Loeffler's

1. Black, W. C.: Acute Infectious Gingivostomatitis ("Vincent's Stomatitis"), Am. J. Dis. Child. **56**: 126 (July) 1938.

blood serum, dextrose agar or hormone agar showed a preponderance of gram-positive diplococci surrounded by well marked capsules. In two cases Neufeld typing of these organisms showed capsular swelling with type III pneumococcus antiserum. In addition to the gram-positive diplococci there was the usual mixed growth of gram-positive and gram-negative staphylococci, streptococci and bacilli usually found in the normal mouth. No Klebs-Loeffler bacilli were identified. Direct smears in almost all the remaining cases investigated also showed a heavy preponderance of gram-positive diplococci. Two of the blood cultures made in three febrile cases shortly after the onset were negative, and the third was contaminated.

Cultures of the milk and water in two of the camps were submitted to the state board of health; no significant abnormality was reported.

For the purpose of demonstrating a possible virus etiology, an attempt was made to duplicate the experiments of Youmans,[2] Long [3] and Dodd, Johnston and Buddingh.[4] Material was obtained from the lesions in two cases—in one on the second day of the disease and in the other on the third day—and rubbed well into the scarified cornea of a rabbit. In neither case had a herpetic keratitis developed at the end of forty-eight hours.

COMMENT

The concurrence of four cases of herpes zoster auricularis, a disease rarely encountered in general practice, with these cases of vesicular pharyngitis raises the question of whether one may be an atypical manifestation of the other. The fact that the pharyngeal lesions in most of our cases were bilateral, that they had a predilection for the tonsils and pillars and that the distribution of the pain was local rather than trigeminal is against this possibility.[5] Furthermore, in no patient did a facial paralysis or a cutaneous eruption develop.

The luxuriant growth of encapsulated diplococci and their appearance in large numbers in direct smears from the lesions strongly suggested to us at first that they were etiologically significant. The lesions noted in our cases, however, did not resemble the glistening gray membrane described as typical of pneumococcic pharyngitis (which itself is not a commonly recognized clinical entity).[6] It is also recognized that the pneumococcus may be more easily cultured from the throat in the presence of any acute infection of the upper respiratory tract. Finally, the benign course of this pharyngitis contrasts with the severe consequences of pneumococcic infection as usually observed elsewhere in the body.

The question presents itself whether the buccal lesions in these cases might be the oral manifestation of foot and mouth disease ("aphthous fever" of the French literature).[7] The primary vesicular and secondary ulcerative nature of the lesion is similar in the two. Foot and mouth disease is transmissible from cattle to man.[8] No cases of this disease were reported in cattle in the neighborhood, however, and pasteurized milk was used in all the camps. None of the patients in the series showed lesions of the hand, foot, face or nose, and the rapid spread observed in the present epidemic has not been described in the human form of foot and mouth disease.[9]

Herpetic origin of the disease seems the most likely, although such a conclusion is suggested only by clinical evidence to be outlined later and is therefore open to serious objection. The herpetic nature of some cases of vesicular and ulcerative pharyngitis and stomatitis has been demonstrated.[10] The lesions seen in our cases correspond closely to those described in the literature as typical of herpetic pharyngitis and stomatitis (sometimes called aphthous stomatitis [11] in the English and German literature). The drawing reproduced in Youmans' [2] article, for example, shows lesions on the palate resembling those seen in many of our cases. We were fortunate in having Dr. Perrin Long [3] examine a number of the throat lesions; he has given us permission to quote his opinion that they were herpetic. We do not regard our failure to demonstrate a virus as significant, since the conditions under which the experiments were carried out were far from ideal, and technical difficulties could easily account for it.

Although a search of the literature fails to show a report of an epidemic with purely buccopharyngeal localization of the vesicular lesions, a few epidemics of herpes labialis (occasionally referred to in the older literature as "herpetic fever") have been reported, and in exceptional instances there was involvement as well of the throat, buccal mucosa or gums.[12] Dodd, Johnston and Buddingh [4] recently reported a series of twenty-eight cases of herpetic stomatitis with simultaneous involvement, in a few rare cases, of the soft palate, tonsils and posterior pharynx. The cases appeared in groups, but there were not enough at any one time to warrant the use of the word "epidemic."

SUMMARY

An epidemic of vesicular pharyngitis and stomatitis occurred in three New Hampshire summer camps. The disease, affecting 106 persons, was characterized by a high infectivity and ran a benign, uncomplicated course of four or five days. The chief signs were fever and the appearance of vesicles, which subsequently ulcerated, on the faucial pillars, soft palate and tonsillar tissue when present. The disease occurred in patients from 7 to 67 years of age but had a predilection for the young. The maximum incubation period in two controlled cases was five and seven days. Cultures and direct smears of the lesions showed a preponderance of pneumococci. A herpetic origin of the disease is favored on clinical grounds, although experimental proof is lacking.

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THE DISTRIBUTION OF SULFANILAMIDE IN THE EYE

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The widespread success enjoyed by sulfanilamide and its derivatives in the treatment of some infectious diseases has naturally called attention to possible applications in ophthalmology. Encouraging reports have already appeared in their use in trachoma by Kirk and his associates,[1] Loe[2] and others; in gonorrheal ophthalmia by Magitot and his associates,[3] Luis and Ricardo, Fernandez,[4] Willis[5] and others; in orbital cellulitis by Goldenburg[6] and Szinegh;[7] in abscess of the lid by Szinegh, and in herpetic corneal lesions by Kleefeld.[8] Experimentally, streptococcic infections in rabbits' eyes have been successfully treated with sulfanilamide by Rambo.[9] Little work has been done, however, on the penetration of this compound into the eye, although Marshall and his co-workers[10] demonstrated that it readily entered various tissues and fluids of the body. Rambo, on the basis of a single determination, concluded that it appears in the aqueous and vitreous humors and in the lens after oral administration. The other ocular tissues were not analyzed. The present investigation was undertaken in an attempt to secure information on the distribution of sulfanilamide in the eye under various conditions.

EXPERIMENTAL

1. *Penetration into the Eye After Single Massive Doses by Mouth.*—Sulfanilamide 0.2 Gm. per kilogram of body weight was suspended in approximately 25 to 30 cc. of water and partially dissolved by the addition of several drops of concentrated hydrochloric acid. This solution was then administered by stomach tube to dogs under pentobarbital sodium anesthesia. At specified time intervals, aqueous humor was aspirated and a blood sample drawn. This was followed immediately by the enucleation of the eyeball, which was dissected into the following components: lens, vitreous humor, corneoscleral layer and chorioretinal layer. These were weighed immediately and all tissues but the vitreous humor were transferred to mortars, where they were thoroughly ground with sand and a minimum volume of 15 per cent trichloroacetic acid. Each mixture was transferred quantitatively to a 15 cc. tube and centrifuged for from five to ten minutes. The supernatant liquid was decanted into a test tube calibrated at 10 cc. and the precipitate twice washed with 1 cc. portions of the trichloroacetic acid. The supernatant liquid and washings were combined and diluted to the mark with more of the acid. This solution was diazotized and coupled with dimethyl-alpha-naphthylamine[11] and compared with the properly prepared standards, according to the method of Marshall.[12] The vitreous humor was transferred to a centrifuge tube and deproteinized with 5 cc. of 15 per cent trichloroacetic acid. The remainder of the determination was carried out as already described. To determine the sulfanilamide in the aqueous humor, 7 volumes of water and 2 volumes of 15 per cent trichloroacetic acid were added to each volume of the aqueous. This was centrifuged and aliquot portions of the supernatant liquid were treated as before. Reproducible results could be obtained with as little as from 0.1 to 0.2 cc. of aqueous.

Sulfanilamide was found to penetrate into the eye with great rapidity. Within fifteen minutes after ingestion of the compound, traces could be detected in each of the ocular tissues and fluids. As shown in table 1,

TABLE 1.—*Sulfanilamide (Milligrams per Hundred Cubic Centimeters) in Tissues and Fluids After Large Single Dose (0.2 Gm. per Kilogram)*

	Hours							
	1	2	3	4	6	12	24	48
Blood	2.1	3.3	17.9	18.0	19.1	14.7	4.4	1.1
Aqueous humor	0.7*	1.5	10.1	10.9	11.6	9.2	4.1	0.6
Lens	0.3	0.7	1.8	2.7	8.6	9.5	5.4	2.5
Vitreous humor	0.3	0.7	7.6	8.4	8.6	8.2	5.2	0.4
Corneoscleral layer	1.2	1.8	11.6	13.4	12.3	11.7	3.8	0.7
Chorioretinal layer	2.4	3.3	15.0	15.2	15.0	15.4	4.5	0.7

* The mean of two determinations; all other values are the mean of three or more determinations.

with the exception of the lens all these attain their maximum concentration at about the sixth hour. In the crystalline lens the peak is reached at about the twelfth hour. By far the most rapid rise occurs between the second and the third hour. The ocular constituents and blood showed a five to ten fold increase during this period. Again the lens was the sole exception. Here the sharpest rise was between the fourth and the sixth hour. The concentration of sulfanilamide was found to be in the following order: blood, chorioretinal layer, corneoscleral layer, aqueous humor, crystalline lens and vitreous humor. Those tissues attaining the highest concentration fell the most precipitously. Thus the blood contained 19.1 mg. per hundred cubic centimeters after six hours but only 4.4 mg. per hundred cubic centimeters at the end of twenty-four hours. Similarly the chorioretinal value had fallen from 15 to 4.5 mg. per hundred cubic centimeters in this period and the corneoscleral from 13.4 to 3.8. On the other hand, the lens still contained 5.4 mg. per hundred cubic centimeters after twenty-four hours, although its peak was only 9.5 mg.[12a] The vitreous showed even less of a decrease, dropping only from 8.6 mg. at six hours to 5.2 mg. at twenty-four hours.

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12a. This difference in the rate of depletion of sulfanilamide from the crystalline lens as compared to the aqueous and blood may cause an upset in osmotic equilibrium which manifests itself clinically as transient myopia

After forty-eight hours the lens still possessed 2.5 mg. per hundred cubic centimeters of sulfanilamide—more than three times as much as any other ocular tissue.

2. Penetration into the Eye After Divided Therapeutic Doses.—In the previous experiment sulfanilamide was employed in large single doses—doses considerably higher than those recommended for clinical use.[13] The effect of the drug given in therapeutic doses was next investigated.

Sulfanilamide 0.075 Gm. per kilogram of body weight was administered daily in four divided doses. Gelatin capsules containing the required dose was given with the food (forcibly if necessary) at 8 a. m., noon, 6 p. m. and 10 p. m. Blood was drawn and eyes were removed under light ether anesthesia after one, two, four and six days, and the analyses performed as described in the preceding section.

The values thus obtained are summarized in table 2. A fairly uniform level was maintained during the experiment, although the values are far lower than those secured in the previous experiment. Since all analyses were made at 8 a. m. (ten hours after the previous feeding), the values reported represent the minimum concentration during the experiment.

To learn whether the amounts thus determined differed materially from the sulfanilamide concentration at other times during the day, blood was drawn immediately before each administration of the drug. Expressed in milligrams per hundred cubic centimeters, the following values were secured: at noon 2.1, at 6 p. m. 2.7, at 10 p. m. 3.5 and at 8 a. m. 1.4 These values are quite low when one remembers that a blood level of from 5 to 10 mg. per hundred cubic centimeters is advocated for optimum therapeutic action and that such a level can be maintained in man on doses comparable with those used in our experiment.

TABLE 2.—*Sulfanilamide (Milligrams per Hundred Cubic Centimeters) in Tissues After Therapeutic Divided Doses (0.075 Gm. per Kilogram Daily)*

		Days			
	Dose	1	2	4	6
Blood	0.037 Gm. per Kg. b.i.d.	2.6	2.2	2.7	1.4*
	0.019 Gm. per Kg. q.i.d.	2.1	1.2	3.2	2.3
Aqueous humor	0.037 Gm. per Kg. b.i.d.	1.8	1.5	1.6	1.1*
	0.019 Gm. per Kg. q.i.d.	1.8	1.1	...	2.6
Vitreous humor	0.037 Gm. per Kg. b.i.d.	1.2	1.0	1.6*	1.3*
	0.019 Gm. per Kg. q.i.d.	1.6	1.1	2.2	1.4
Lens	0.037 Gm. per Kg. q.i.d.	3.0	2.8	3.9	2.0†
	0.019 Gm. per Kg. q.i.d.	1.4	2.6	2.8	1.4
Chorioretinal layer	0.037 Gm. per Kg. b.i.d.	2.8	2.1	2.2	2.6*
	0.019 Gm. per Kg. q.i.d.	2.7	2.5	2.2	4.1
Corneoscleral layer	0.037 Gm. per Kg. q.i.d.	1.4*	1.4	4.3	1.4*
	0.019 Gm. per Kg. q.i.d.	1.7	1.7	2.6	2.7

* The mean of two determinations.
† Single determination; all other values are the mean of three or more determinations.

If the same amount of sulfanilamide was given in two doses (at 9 a. m. and 5 p. m.) instead of in four, very little difference was apparent in the tissue content. Table 2 illustrates this close agreement for periods of one, two, four and six days.

3. Action of Heat and Chemicals on the Concentration in Aqueous Humor.—In an attempt to increase the concentration of sulfanilamide in the eye on a given dose, the effect of heat and drugs on the eye was investigated. No significant difference in the amount of sulfanilamide could be detected between that found in the aqueous humor of an untreated eye and one to which heat had been applied for two hours. Negative results were also secured with ethylmorphine hydrochloride, atropine and physostigmine. Aqueous humors of eyes that were treated with acetyl-beta-methylcholine chloride (mecholyl), however, showed a distinct increase over the control values, as is evident from table 3.

TABLE 3.—*Effect of Heat Paracentesis and Drugs on Sulfanilamide in Aqueous Humor*

	Time in Hours	Blood	Sulfanilamide, Mg. per 100 Cc. Aqueous Humor: Control Eye	Sulfanilamide, Mg. per 100 Cc. Aqueous Humor: Treated Eye
Heat	2	....	4.0	4.2
Ethylmorphine hydrochloride	2	....	9.5	9.3
Physostigmine	1½	....	3.8	4.0
Atropine	2¼	....	3.4	3.1
Mecholyl	2¼	....	9.2	9.8
Mecholyl	2¼	....	8.0	9.1
Mecholyl	2	....	5.6	8.3
Paracentesis	2½	18.4	8.4	12.7
Paracentesis	2½	22.3	11.4	12.8
Paracentesis	2½	21.1	15.0	17.2

4. Effect of Paracentesis on Sulfanilamide in Aqueous Humor.—The aqueous humor of each eye treated with mecholyl was rich in protein. This was evident from the turbidity of the solution, the volume of precipitate after addition of trichloroacetic acid and a marked tendency of the aqueous to clot. Mecholyl, therefore, appears to increase the permeability of the capillaries in the ciliary body, probably through their dilatation. This action is similar to that of paracentesis, which is known to produce a second aqueous whose constituents closely approximate that of blood. The effect of paracentesis on the sulfanilamide content of the aqueous humor was therefore investigated.

Three dogs under pentobarbital sodium anesthesia were given 0.2 Gm. of sulfanilamide per kilogram of body weight by stomach tube. Two hours after administration, the aqueous from the right eye of each animal was aspirated. Thirty minutes later aqueous humor was drawn from each eye and samples of blood were removed for analysis. The analyses, as reported in table 3, indicate that the sulfanilamide content of the second aqueous was increased, lying between the values found for the blood and that for the original aqueous.

5. Local Applications of Sulfanilamide.—If sulfanilamide can readily penetrate the conjunctival epithelium and through the cornea, a more effective method of therapy might be attained by local application than by oral administration. To test this possibility, sulfanilamide was dusted on the conjunctival sac and cornea of the animals and allowed to remain for two hours. This produced a moderate reaction, causing chemosis and staining of the corneal epithelium. After repeated irrigation and scraping of the epithelial layers of the conjunctiva and cornea, the underlying subconjunctival tissue and corneal stroma gave a positive test for sulfanilamide. However, one could not rule out contamination entirely. The aqueous and vitreous humors were aspirated by a posterior approach so as to avoid contamination from the conjunctival sac. Not a trace

13. Marshall, E. K., Jr.; Emerson, Kendall, Jr., and Cutting, W. C.: Para-Aminobenzenesulfonamide; Absorption-Excretion: Method of Determination in Urine and Blood, J. A. M. A. **108**: 953 (March 20) 1937.

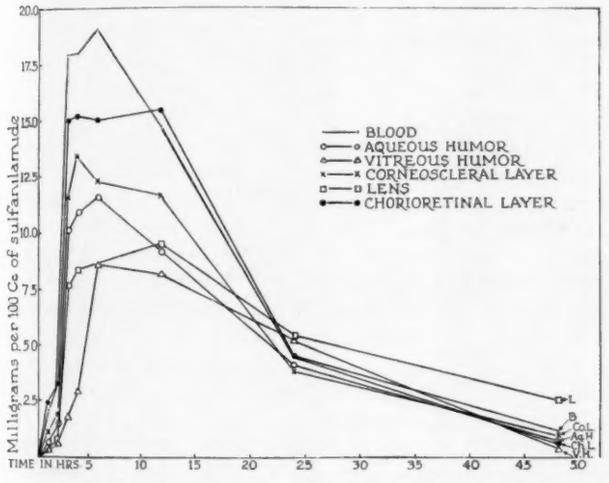
of sufanilamide could be detected in either fluid despite the extreme delicacy of the test (sensitive to 1 part in 20,000,000).[13]

When 1 cc. of a saturated solution of sulfanilamide was injected subconjunctivally, a concentration of 0.3 mg. per hundred cubic centimeters was found in the aqueous, a value far lower than that obtained when sulfanilamide is given by mouth.

6. *Sulfanilamide in Tears.*—Tears were collected from two patients receiving 3 Gm. of sulfanilamide daily by mouth. They were analyzed by the method described for aqueous humor. The tears of the first patient, secured three hours after the administration of 1 Gm. of the drug, contained 1.5 mg. per hundred cubic centimeters. Those of the second patient, collected seventeen hours after an equal dose, contained 0.8 mg. per hundred cubic centimeters.

COMMENT

The ready permeability of all tissues thus far examined to sulfanilamide is undoubtedly an important factor in its therapeutic efficacy. The data here presented show that the tissues of the eye can be included



Concentration of sulfanilamide in the ocular tissues and fluids following a single large dose.

in this group. The distribution of the sulfanilamide in the various ocular tissues is of interest. The chorioretinal layer possessed the highest concentration of the drug, very closely approximating that found in the blood. This layer is also the most vascular tissue of the eye. Next in order, both of vascularity and of sulfanilamide concentration, is the corneoscleral layer. Unfortunately, the cornea and sclera were not analyzed separately, so the value secured is the mean of an avascular tissue (cornea) and of a slightly vascular tissue (sclera). The aqueous humor possesses the next highest concentration, with the vitreous humor and the lens (an avascular tissue) bringing up the rear. These observations suggest that simple diffusion is the chief mechanism in operation and that the tissues do not act to concentrate the drug. The aqueous and vitreous humors obtain the compound by dialysis from the blood. The lens, having no blood supply, must secure its portion from the surrounding media. This indirect transfer plus the presence of a lenticular capsule results in the slower building up of the peak in the lens and conversely in a slower depletion.

The daily portion of sulfanilamide given in two divided doses maintained practically the same level in the eye as the same quantity administered four times a day. The chart shows that the drop in the various tissues and fluids from the sixth to the twelfth hour is slight; consequently ingestion of the drug every twelve hours should be almost as effective as every six hours. There is no apparent explanation for the difference between the values reported for man and the considerably lower levels obtained by us on dogs.

The action of mecholyl in the eye to produce an increase of the aqueous sulfanilamide may have some clinical significance. However, the increase, though definite, is relatively slight. The results obtained after local administration of sulfanilamide indicate that such procedures are valueless as well as irritating. Since the penetration into the eye of sulfanilamide taken by mouth is so rapid and the levels attained are so high, there is little purpose in administering it by any other route.

Its detection in tears was to be expected, since it has been found in every body fluid thus far analyzed. This is merely another indication of its widespread penetrability.

Since this work was undertaken, sulfapyridine (2- [para-aminobenzene sulfonamido] pyridine) has come into prominence as a possible substitute for sulfanilamide in certain infections. Experiments on this compound similar to those reported here are now under progress in this laboratory.

SUMMARY AND CONCLUSIONS

1. Sulfanilamide can be detected in all ocular tissues and fluids within fifteen minutes after its oral administration.

2. The concentration of sulfanilamide in the eye has been determined one, two, three, four, six, twenty-four and forty-eight hours after a single massive dose by mouth. The maximum is reached around the sixth hour. The concentration of the tissues and fluids examined, listed in decreasing order, were as follows: blood, chorioretinal layer, corneoscleral layer, aqueous humor, lens and vitreous humor.

3. Little difference could be detected in the tissues of dogs when therapeutic quantities were administered twice a day or four times a day.

4. Heat, atropine and physostigmine applied locally have no effect on the sulfanilamide concentration of the aqueous humor. Mecholyl, similarly applied, increases this value.

5. The second aqueous contains somewhat more sulfanilamide than does the original aqueous.

6. Sulfanilamide has been analyzed in tears.

720 North Michigan Avenue.

The Prophecy of Robert Boyle.—The way to our understanding of infectious disease was first clearly indicated by the studies of Pasteur on fermentation. In fulfilment of the prophecy of Robert Boyle made in the seventeenth century that the problem of infectious disease would be solved by him who elucidated the nature of fermentation, the investigations begun by Cagniard-Latour and by Schwann and carried to a brilliant culmination by Pasteur revealed the living and specific nature of the various micro-organisms which cause the several forms of fermentation and especially of putrefaction, and thus led by analogy first to logical speculation, then to experimental proof of the etiological relationship between certain of the minute forms of life and the communicable diseases.—Zinsser, Hans; Enders, John F., and Fothergill, LeRoy D.: Immunity Principles and Application in Medicine and Public Health, New York, Macmillan Company, 1939.

HEREDITARY DEFORMING CHONDRODYSPLASIA

REPORT OF TEN CASES IN ONE FAMILY

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> We are all omnibuses in which our ancestors ride, and every now and then one of them sticks his head out and embarrasses us. —*Oliver Wendell Holmes.*

My purpose in this paper is to report ten cases of such embarrassment; that is, ten cases of a relatively uncommon hereditary disease known as hereditary deforming chondrodysplasia.

Hereditary deforming chondrodysplasia is, as the name implies, a hereditary condition in which abnormal cartilaginous growth results in deformity. Although not all cases show deformities, the name used in this paper has become the accepted designation for this disease and is better and more descriptive than most of the synonymous terms, among which are Ollier's disease, hereditary multiple exostoses, diaphysial aclasis, hereditary multiple enchondromas, multiple cartilaginous exostoses and multiple exostoses.

HISTORY OF LITERATURE

Caesar Hawkins in 1837 is said to have been among the first to describe the condition as "laminated exostoses." However, the report of a typical case occurs in the *Lancet* for July 23, 1825, in the reports from Guy's Hospital.[1] The report discusses a case of Mr. Ashton Key's and the concise description will bear quotation:

> The subject of this affection is a healthy looking lad about sixteen years of age; the bone tumors, which are situated in different bones, first began to form about four years since; their progress has been attended with little or no pain; and it was only on account of their inconvenience that he came into the hospital for relief.
>
> The principal tumour is on the inside of the right tibia, just below the head, and as it were growing from the inner ridge or spine of the bone; the tumour is very firm and immoveable, about the size of an hen's egg, with its surface somewhat irregular; the integuments appear tense, but the tumour is not at all tender upon pressure, and there is no enlargement or irregularity to be detected upon any other part of the bone.
>
> In a similar situation to the preceding tumour, is one upon the opposite tibia, not, however, of such magnitude; upon the lower and outer part of the radius, just above the styloid process, is another bony tumour; and also another immediately above the head of the ulna. As we have before stated, these swellings are not attended with pain, and, from their particular situation, do not interfere much with the action of the muscles; no treatment has yet been had recourse to. The disposition to throw out an exuberance of bony matter is by no means an uncommon occurrence, and is, probably, connected with some peculiar state of the constitution.

The first reports in this country were written by Gibney[2] in 1875-1876 and there are few and scattered reports[3] in the literature until 1915-1917, when Ehrenfried[4] collected and reported all cases in American and foreign literature and wrote the outstanding paper on this disease. Since that time reports have been more numerous, although reports are confused, some authors reporting as hereditary deforming chondrodysplasia cases of Ollier's disease and achondroplasia and others reporting cases without any hereditary history. Two of the best recent papers are by Alley[5] and Mahorner.[6]

The cases here reported correspond in every respect to the syndrome known as hereditary deforming chondrodysplasia, which is defined by Alley as "a hereditary disturbance of bone growth beginning early in childhood and characterized by multiple cartilaginous and osteocartilaginous growths within or on the skeletal system. It is a retardation of normal transformation of cartilage into bone and not primarily a bone tumor."

Clinically patients with this condition may show visible or palpable bumps over the long bones and deformities, particularly in the bowing and shortening of the forearms. Many of them are below normal height, owing to shortening of the long bones. The symptoms that call for treatment are deformity, pressure on nerves or tendons or interference with the motion of joints. Malignant degeneration is said to occur in 5 per cent of cases, but the percentage is probably lower than that.

In diagnosis the hereditary factor, the symmetrical distribution of the exostoses, their multiplicity and the x-ray appearances are important. X-ray examination shows multiple exostosis of the long bones in the epiphysial region but springing from the diaphysial side and directed away from the epiphysis along the line of muscular pull. The exostoses vary from simple spikes to pedunculated and cauliflower types and from well ossified spurs to typical chondromas. The epiphyses may be misshapen or absent, although they do not produce any exostoses themselves.

The bones most frequently affected occur in this order: ulna, fibula, femur, humerus and phalanges. The carpus, tarsus, vertebrae, skull and sternum are not involved, since pure cartilaginous or membranous bone escapes this process.

PATHOLOGY

Microscopically these exostoses show an irregular arrangement of cartilage cells and apparently the cells on the metaphysial side of the epiphysial line are responsible for the growths. A report on case 1 of this series by Dr. Thibaudeau of the New York State Institute for the study of malignant disease reads as follows:

> Sections of tissue received in the case of H. O. C., June 14, 1932, showed a marked hyperplasia of cartilage with, in a few areas, some bone formation. The laying down of bone is irregular but offers no suggestion of malignancy. The cartilage in places shows degeneration with calcium deposits in these areas. In the portions where bone is being laid down, typical histology of growing bone is noted.
>
> Our diagnosis at that time was osteochondroma or chondroma. The histologic picture is not inconsistent with chondodysplasia.

Grossly, the appearance of these growths varies from single bony spurs to chondromas with a slim bony shell. They are not found in embryos or fetuses but cases have been recorded in patients at the age of 2 years, and when the lower end of the ulna is the seat of an exostosis the normal ossification of its epiphysis is

Dr. R. Plato Schwartz, professor of orthopedic surgery, of the Strong Memorial Hospital, Rochester, N. Y., placed at my disposal roentgenograms and records of two of the cases, which came under the observation of his department.

1. Guy's Hospital Report, Lancet **8**: 91 (July 23) 1825.
2. Gibney, V. P.: M. Rec., 1875; Am. J. M. Sc. **72**: 73, 1876; M. Rec. **15**: 589, 1879.
3. Wright, J. W.: D. Y. M. J. **45**: 358 (March 26) 1887. Davis, G. G.: Am. J. Orth. Surg. **3**: 234, 1905-1906. Oschner, E. H.: Ann. Surg. **46**: 608, 1907. Percy, N. M.: Surg., Gynec. & Obst. **20**: 619, 1915.
4. Ehrenfried, Albert: Hereditary Deforming Chondrodysplasia—Multiple Cartilagenous Exostoses, J. A. M. A. **68**: 502 (Feb. 17) 1917.
5. Alley, R. G.: Radiology **28**: 576 (May) 1937.
6. Mahorner, H. R.: J. Pediat. **10**: 1 (Jan.) 1937.

interfered with, indicating that the process is well established before the age of 3. Growth appears to stop when skeletal growth stops at the age of 20 or 22, and regression of the exostoses has been noted in some cases. There is apparently no relation to rickets or syphilis, but the disease is probably related to multiple enchondromas.

INCIDENCE

Ehrenfried in 1915 and 1917 found that the reported cases in the literature total about 700. Of those, ninety-nine cases were reported from the United States. Hale [7] in 1930 collected fifty more cases in the English literature since 1917. The percentage, according to nationality, is 60 per cent German, 27 per cent French, 8 per cent English and 5 per cent all other nationalities. Few Negroes are affected, and in this country Anglo-Americans predominate. The patients comprising this series are of Irish origin. The consensus of statistics shows that males are affected more frequently in the ratio of about 3 to 1. In this series there are eight males and seven females.

Reinicke in 1892 found 172 cases in thirty-six families; one family was followed through five generations; two families were followed through four generations, fifteen through three generations and twelve through two generations.

Ehrenfried in 1917 showed heredity as a factor in 176 of 234 cases, 174 occurring in forty-two families: in two through four generations, in fifteen through three and in twenty-one through two. In the family here reported there are fifteen cases in three generations. It is transmitted by males more frequently than by females: by fathers thirty-five and by mothers twenty times, according to Ehrenfried. Two mothers had affected children by different husbands and one father had affected children by two marriages. In two cases it was transmitted by unaffected mothers and in two instances it was seen to skip a generation. In this series it was transmitted by the mother in three instances and by the father twice. It is said that no cases have been reported of the condition being transmitted by an unaffected male, but there appears to be no reason why this should not be true.

Keith [8] believes the inheritance to be mendelian in character, but Oberndorf claims that there is no definite sequence to it.

ETIOLOGY

The etiology of this condition is obscure, and many theories of etiology and mechanism of its production have been advanced. The neoplastic theory is not tenable, as growth and development of exostoses stop at the age of 20 to 22 years with the attainment of skeletal maturity. It is apparently unrelated to rickets or vitamin deficiency; if it were, there should be no hereditary factor.

Kelly Hale,[7] in an attempt to test the question of infectious origin, fed blood and saliva from his patients to fifty pairs of white mice without the production of tumors in any of their progeny. It is unrelated to syphilis or tuberculosis. Kahn tests were done on three of this series and all gave negative results.

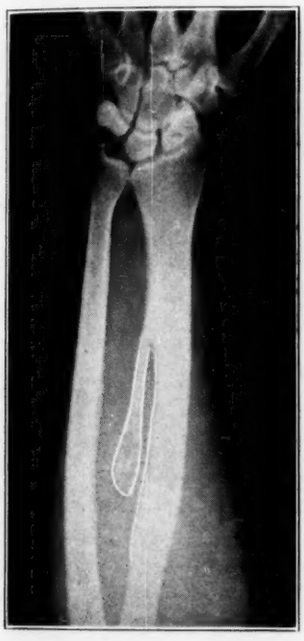

Fig. 1 (case 1).—Left forearm, showing pedunculated type of exostosis.

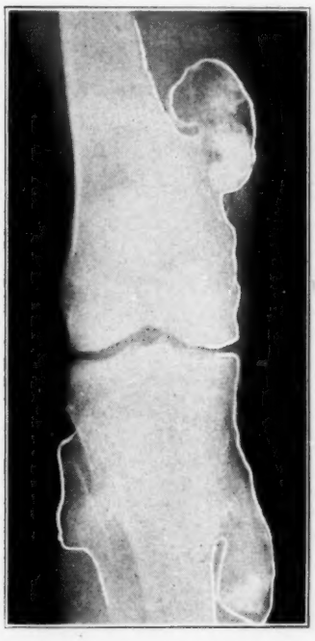

Fig. 2 (case 3).—Right knee, showing chondromatous type of exostoses of femur and tibia.

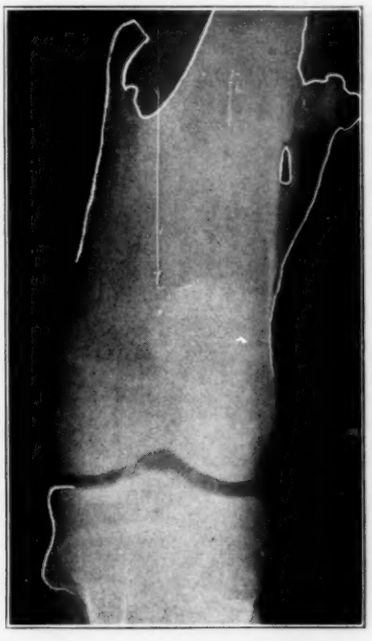

Fig. 3 (case 3).—Left knee, showing exostoses of femur and tibia.

The distribution of the disease is the same as that of thyroid deficiency, and the possibility of a glandular disturbance, as of the thyroid or pituitary, has been considered by some.

Keith and Janssen think that it is due to the failure of the process of breaking down of bone and shaping or modeling of the bone, as described by John Hunter.

Hale, working on the basis that the bones most frequently involved are those which are most frequently fractured and that the incidence is highest in those countries in which skeletal trauma is greatest, has advanced the interesting theory that it is produced by impressions made on the germ plasm, consequent to fractured bones and their complex healing process or that the patients "are made susceptible through transmission from past generations of various obnoxious environmental experiences."

7. Hale, Kelly: Ann. Surg. **91**: 92 (July) 1930.

8. Keith, A.: J. Anat. **54**: 101, 1919-1920.

Geschickter and Copeland [9] believe that a failure in adequate development of the periosteum results in (1) a failure of the cortex to attain full thickness and (2) the failure of an inadequate periosteum to limit the growth of bone.

Hume [10] believes that it is due to the abnormal behavior of the cells of the growth disk and a failure of subperiosteal bone to keep pace. He states that an abnormal stimulus to the center of the disk and failure of ossification results in enchondroma. Abnormal stimulus to a localized portion of the periphery of the disk results in single pedunculated exostoses and a more generalized stimulus of the growth disks of the long bone results in multiple exostoses. None of these theories are completely satisfying and it would be surprising if they were, as the question of the cause and method of production of this condition involves the highly complex and fundamental problems of heredity and of bony growth.

cases deformities are present. Seven of the cases were proved by x-ray evidence. Three others presented exostoses on examination. Four of the patients are dead, two of whom had been examined by Dr. Cole and Dr. Knoll and were known clinically to have had exostoses. The other patients are said by the family to have had definite exostoses. The other living patient I have not had an opportunity to examine because he lives at a distance.

REPORT OF CASES

CASE 1.—Miss H. O'C., aged 27, a nurse, was admitted to St. Jerome Hospital, April 7, 1931, for the excision of bony spurs from the right radius and ulna because of pain and interference with movements of the wrist. Unfortunately roentgenograms are not available. No pathologic examination was made on the excised specimens. The operative result was good.

June 14, 1932, the patient was again operated on, this time for pain in the left upper quadrant of the abdomen, and a tumor was excised from the ninth left rib. The operative result was good.

Fig. 4 (case 7).—Lateral view of left forearm, showing large exostosis of left radius.

Fig. 5 (case 8).—Anteroposterior view of left forearm showing characteristic "arrow-head" deformity of lower end of ulna, with marked bowing of radius.

Fig. 6 (case 9).—Anteroposterior view April 7, 1931, of both forearms. Right side shows large exostosis of lower end of ulna with marked bowing of radius.

COMPLICATIONS

The commonest complications of this disease are due to pressure of the exostoses on nerves or interference with the function of muscles, tendons and joints. They are subject to trauma, since they may often project and strike against objects, particularly about the knee. Deformities, especially due to shortening of the ulna, may require correction. Five per cent are said to become malignant, but this percentage is probably too high. These conditions should remain untreated until after bony growth has stopped if possible. Indications for removal are deformity, interference with the function of joints, muscles or tendons, and evidence of a malignant condition or an increase in size after bony growth has stopped.

My series includes fifteen cases of this disease in three generations of one family. The reports illustrate well most of the points that have been discussed. The hereditary influence is well shown and in some of the

At the present time roentgenograms of both knees and both forearms show multiple exostoses of the lower ends of both femurs and upper ends of both tibias. The exostoses on the femurs are spikes, while those on the tibias are pedunculated. The left forearm shows a long pedunculated exostosis arising from the radius, lying between the radius and the ulna. The right forearm shows no tendency to recurrence of the spurs previously removed. A roentgenogram of the pelvis showed a small bony projection on the inner aspect of the neck of the right femur (fig. 1).

CASE 2.—A man aged 25, married, a chauffeur, has exostoses of both knees and of the right ankle, disclosed on examination. He has known about them for several years. Roentgenograms were not made. He is a brother of patient 1.

CASE 3.—A single man, aged 50, a laborer, 5 feet 4 inches (163 cm.) tall, has large, easily visible and palpable exostoses of the lower ends of both femurs and the upper ends of both tibias on the inside. The patient is in good health. He has had a perforated ulcer twice, about a year apart six or seven years ago. He has never been operated on for exostoses and has had no pain or inconvenience from them (figs. 2 and 3).

CASE 4.—A married man, aged 52, a printer, 5 feet 6 inches (168 cm.) tall, is a brother of patients 3 and 5 and father of

9. Geschickter, C. F., and Copeland, M. M.: Tumors of Bone, New York, American Journal of Cancer, 1936.
10. Hume, J. G.: Brit. J. Surg. **17**: 236 (Oct.) 1929.

patients 7 and 8 (both girls) two unaffected sons and one affected son who died at the age of 9 years in 1918. At the age of about 20 the patient had an extosis removed from the right knee and at the present time he has small exostoses of the inner aspects of the heads of both tibias.

CASE 5.—A married man, aged 48, a foreman, 5 feet 7 inches (170 cm.) tall, a brother of patients 3 and 4 and the father of patients 9 and 10, has a small, well developed and unmistakable exostosis on the inner aspect of the upper end of the right tibia. His general health has always been good. He has experienced no inconvenience from exostoses. One daughter is unaffected.

CASE 6.—V. M. McL., a schoolgirl aged 13, has exostoses which were first noticed on the left arm at the age of 5 years. This has regressed so that there is at the present time only a slight irregularity over the lower end of the radius on the external aspect. There is a small easily palpable exostosis on the inner aspect of the upper end of the left tibia. The patient's mother, who is dead, was known to be affected and the mother's sister is patient 1.

CASE 7.—C. L., a schoolgirl aged 15, sister of patient 8 and daughter of patient 4, has exostoses on both knees which are troublesome; there is about 1 inch shortening of the right leg. There are also exostoses of the forearms (fig. 4).

CASE 8.—J. L., a schoolgirl aged 11, sister of patient 7, has marked deformity of the left forearm due to shortening of the ulna and bowing of the radius, similar to that of her cousin, patient 9. There is also deformity about both knees. Her general health is good (fig. 5).

CASE 9.—P. L., a girl aged 18, a student at business school, daughter of patient 5 and sister of patient 10, was first found to have exostoses on the left ankle at the age of 18 months. In April 1931 she was admitted to the Strong Memorial Hospital with a deformity of the right forearm and pain and swelling of the left ankle. Dr. W. W. Fray's report on the roentgenograms taken at that time is quoted at length because it illustrates many of the typical points in the x-ray examination (fig. 6).

The anteroposterior and lateral views of both knees showed numerous exostoses at the ends of the shafts of all the bones of this region. They were located at the upper end of the tibias and fibulas fairly close to the epiphysial lines but entirely on the diaphysial sides of these lines. Exostoses were also noted at the lower ends of the femur on the diaphysial side of the epiphysial line. In general, the larger and heavier exostoses were seen about the right knee. All these exostoses showed a broad, heavy base, and many of them were directed away from the joint. The epiphyses of this region showed no involvement of this type.

The anteroposterior and lateral views of both lower legs showed exostoses at the lower ends of both tibias, mostly on the lateral aspect of the bone. The adjacent portions of the tibias were deformed or modified by the pressure of these exostoses. The small bones of the ankle appeared normal except for a small excrescence on the plantar aspect of the left calcaneus.

The anteroposterior and lateral views of both forearms showed an extreme deformity with lateral bowing of the radius and marked stunting in length of the growth of the right ulna which resulted in an abnormally short right forearm. A large heavy exostosis was present at the lower end of the right ulna, which projected mainly on the medial aspect of the shaft, deforming the outlines of the adjacent bundles of muscle. The lower end of the diaphyses of this bone showed no distinction between cortex and medulla but appeared to be entirely replaced by the material in the exostoses. Owing to shortening of this bone the lower epiphysis of the ulna was at a considerable distance from the carpal bones of the wrist and did not appear to articulate with them. Only the lower end of the radius articulated with the carpal bones, producing a conspicuous anomaly of the right wrist, which produced a marked deformity. At the upper end of the ulna the articulation appeared atypical. The lower left radius showed a smaller exostosis projecting from the lower shaft. The ulna was not deformed and its lower epiphysis entered into articulation of the wrist.

Multiple cartilaginous exostoses of all regions were examined. A rather pronounced dystrophy of growth had occurred at the right lower forearm, owing undoubtedly to the failure of the lower epiphysial line of the ulna to carry on its normal function, resulting in a decreased length of bone. This was probably due to the fact that the exostoses in this region ran up to the epiphysial line itself.

April 29, 1931, the patient was operated on; the head of the right radius was excised to straighten the right forearm and several exostoses were removed from the lower end of the left tibia. The operative result was good in that the function of the arm was much better. The pathologic report on tissue from the tibia was "an irregular laying down of bone and cartilage with no evidence of tumor formation."

CASE 10.—J. L., a schoolboy aged 15, the brother of patient 9, was admitted to the Strong Memorial Hospital outpatient department Nov. 2, 1931, for x-ray examination. Exostoses had first been noted on the ribs as a small child and on the right knee at the age of 7.

A report on the x-ray examination of the long bones was exostoses in all regions examined.

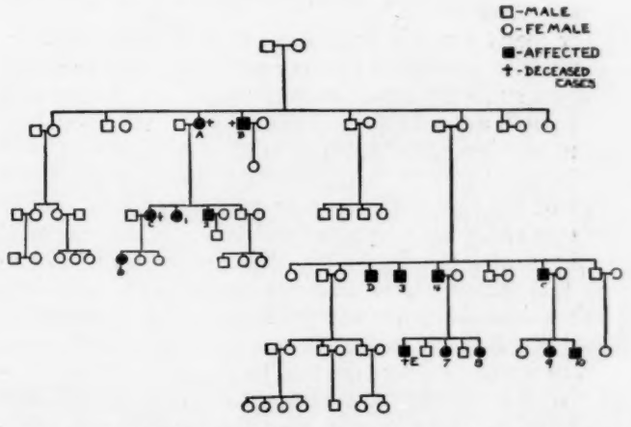

Fig. 7.—Distribution of cases in this family. Cases indicated by numerals proved by x-ray or clinical examination by author. Cases indicated by letters accepted on report of family and other physicians. The squares indicate males and the circles females; the solid black indicates affected members of the family, and the dagger indicates deceased members.

Figure 7 shows the relationship between the patients. The cases here reported are so indicated.

The patients who died or whom I have not examined but have included in the chart on testimony of the family or other physicians are indicated by letters:

CASE A.—A female patient of Dr. I. A. Cole's of Batavia had large exostoses of the knee.

CASE B.—A male patient of Dr. G. H. Knoll's of Le Roy, N. Y., had large exostoses of the ankle.

CASE C.—This woman was said by her sister and her husband to have had exostoses of the knees.

CASE D.—This man is said to have exostoses, according to his brothers; he lives at a distance and was not examined.

CASE E.—A boy aged 9 years, died in 1918 following an injury to the exostoses, operation and influenza. He was said by physicians to have had many exostoses, according to his father.

SUMMARY

1. Fifteen cases of hereditary deforming chondrodysplasia in three generations were observed. Nine of these were proved by x-ray and clinical examination by the author; the others are accepted on the strength of clinical examinations by other physicians in two cases and on the family history in the other three.

2. The ten cases reported illustrate the heredity factor. There are three brothers affected; two of them have two affected children each.

3. There are two cases of shortening and bowing of the forearm.

4. The multiplicity of exostoses is shown in all the cases. Only enough roentgenograms were taken in several of the cases to prove the diagnosis and not to show the distribution or number of exostoses. All plates have been retouched with white ink to bring out the outline of the bony growths.

41 Jackson Street.

THE MECHANISM OF FIXED DILATATION OF THE PUPIL

RESULTING FROM IPSILATERAL CEREBRAL COMPRESSION

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For many years it has been recognized that when a patient with evidence of increased intracranial pressure becomes suddenly comatose and shows one dilated and fixed pupil, a presumptive localization of an expanding lesion in the ipsilateral cerebral hemisphere is permissible. Macewen [1] suggested the possible diagnostic value of the sign, and the more recent works of Rand,[2] Holman and Scott,[3] Kaplan [4] and Hoessly [5] have proved its practical localizing value. The mechanism producing this phenomenon has not been clear. Various explanations have been suggested, the most common being that it is due to direct pressure on the third nerve.

A series of patients admitted to the neurosurgical service with unilateral expanding cerebral lesions at some distance from the midbrain have shown ipsilateral pupillary dilatation as a sudden near terminal or terminal sign. Of these, nine patients have been selected for this report because of their conditions and one patient has been included whom Dr. F. H. Mackay allowed us to study. Six of the group died and from the anatomic studies the only explanation for the dilated and fixed pupil has seemed to be direct pressure on the third nerve by the ipsilateral hippocampal gyrus, which had herniated over the free edge of the tentorium of the cerebellum (fig. 1). In three of these fatal cases there were recent infarctions in the ipsilateral occipital lobe due, it was concluded, to disturbance of blood flow through the posterior cerebral artery or its branches by the direct pressure of the herniated brain (fig. 2). Observations made on the four patients who recovered after operative removal of the ipsilateral expanding cerebral lesion also supported the explanation of the sign arrived at from postmortem studies.

To make the evidence for concluding that the sign was due to direct pressure on the third nerve more than circumstantial, experimental extradural compression was carried out, monkeys being used for the experiments. In five of fifteen Macacus rhesus monkeys the experiments went awry as the result of technical errors. Of the remaining ten animals, seven showed ipsilateral fixed dilatation of the pupil and ptosis and three showed dilatation and slight ptosis, but some reaction to light remained. Ipsilateral hippocampal herniations (fig. 3) similar to those in human beings were produced in the ten animals by extradural compressions but no infarctions of the occipital lobes or pontile hemorrhages were encountered. The herniations produced were acute and chronic. The acute herniations were made under anesthesia, while in the chronic ones the animals were allowed to recover from the anesthesia after operation and were carefully watched as the intracranial pressure increased and the third nerve signs developed.

The histories and examinations of three patients, together with the results of one of the acute experimental herniations and one of the chronic ones, will be given in some detail, since the observations recorded are representative and show the type of studies on which our conclusions are based.

In the majority of instances in which we have observed a dilated and fixed pupil as a localizing sign, the condition of the patients has been critical and they have been unable to cooperate sufficiently for us to recognize other signs of complete paralysis of the third nerve. In the following case of extradural hemorrhage from a torn middle meningeal artery, the patient was able to carry out the examiner's instructions and there proved to be a total paralysis of the third nerve.

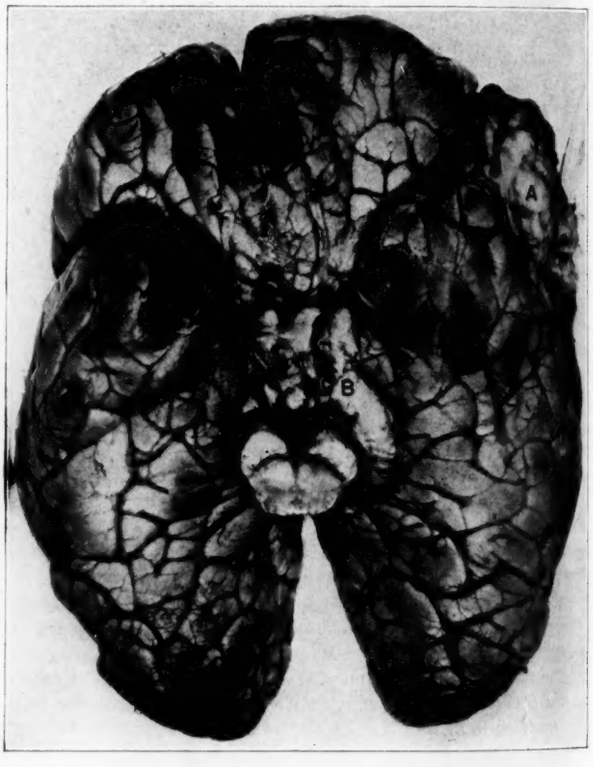

Fig. 1.—*A*, tumor in the left frontal lobe. The hippocampal gyrus on the left side shows marked herniation (*B*) directly over the third nerve (*C*). No infarction of the occipital lobe is present and there are no hemorrhages in the midbrain. Herniation outlined by arrows. This patient's left pupil was dilated and fixed at the time of admission and the left palpebral fissure was narrowed. She was clear mentally. After the history and examination were completed lumbar puncture was done. Gradually the usual headache became more intense, the blood pressure began to rise and she vomited. Stupor, coma, slowing respiration and finally cessation of breathing followed in sequence. She died fourteen hours after the lumbar puncture.

CASE 1.—G. N., a man aged 28, was referred by Dr. C. D. MacIntyre of Vankleek Hill, Ont. Twenty-four hours before admission the patient had suffered a blow to the right side of

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From the Montreal Neurological Institute.

1. Macewen, William: The Pupil and Its Semiological Aspects, Am. J. M. Sc. **94:** 123, 1887.
2. Rand, C. W.: Significance of Dilated Pupil on Homolateral Hemiplegic Side in Cases of Intracranial Hemorrhage Following Head Injuries; Report of Seven Cases, Arch. Surg. **18:** 1176 (April) 1929.
3. Holman, Emile, and Scott, W. M. J.: Significance of Unilateral Dilatation and Fixation of Pupil in Severe Skull Injuries, J. A. M. A. **84:** 1329-1332 (May 2) 1925.
4. Kaplan, Abraham: Chronic Subdural Haematoma: A Study of Eight Cases with Special Reference to the State of the Pupil, Brain **54:** 430-459 (Dec.) 1931.
5. Hoessly, H.: Das Verhalten der Pupillen beim traumatischen Hirndrucke (Compressio cerebri), Mitt. a. d. Grenzgeb. d. Med. u. Chir. **30:** 1, 1918.

the head and was unconscious for five or ten minutes. After he regained consciousness there was an interval of about three hours, during which time he vomited twice and complained of severe headache. He then became restless and irritable.

The attending physician noted that the right pupil was slightly larger than the left and was sluggish in its reaction to light; he made a presumptive diagnosis of hemorrhage of the middle

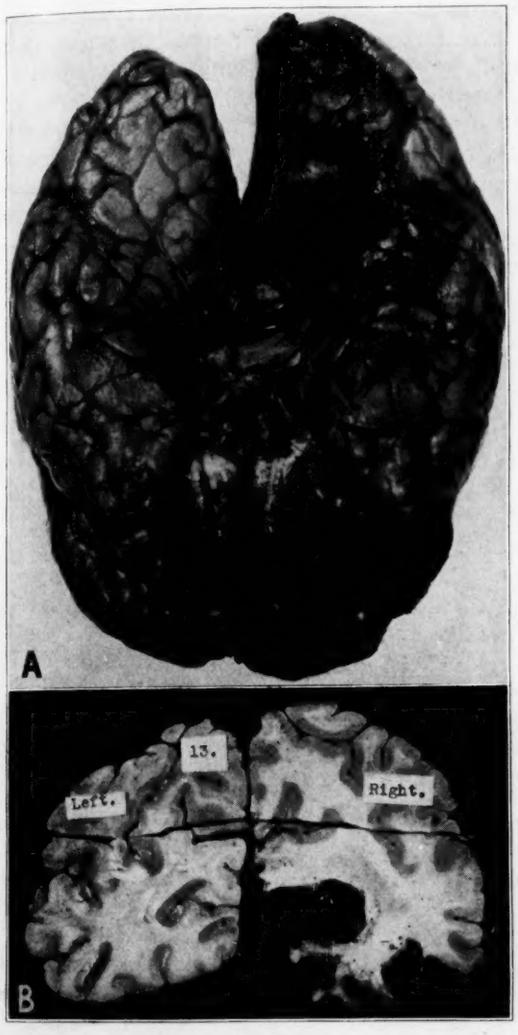

Fig. 2 (case 3).—Infarction of the mesial surface of the right occipital lobe *A* and *B*. The herniation of the hippocampal gyrus on the right side is shown in *A* at *X*. There was some herniation on the left side as well. There were no hemorrhages in the midbrain.

meningeal artery. On admission to the hospital the patient cooperated with the examiner, although he was dull and resented being disturbed. By this time the right pupil was fully dilated and fixed; there was ptosis of the right upper lid and the extra-ocular muscles supplied by the third nerve were paralyzed.

A right subtemporal decompression was carried out by Dr. Donald Coburn as an emergency procedure and a large extradural hematoma was removed. After operation the signs cleared rapidly. Within five hours the right pupil, although still dilated, reacted to light. The eye movements began to return and the patient complained of diplopia. He made a rapid recovery and on discharge the eye movements were normal but there remained slight ptosis and the right pupil was still slightly larger than the left, although both reacted to light and in accommodation.

The posterior cerebral artery passes lateral to and immediately above the oculomotor nerve, in close relation to the free edge of the tentorium. If the intracranial pressure is great enough to cause herniation sufficient to alter the blood flow in this artery or its branches, circulatory changes in the ipsilateral area of supply might also be expected. Infarction was found in three of the six fatal cases.

The second case, presenting late hemorrhage of the middle meningeal artery, first showed an ipsilateral dilated and fixed pupil, and then the contralateral pupil also became dilated and fixed. Although the large clot was removed and the bleeding point controlled, the patient did not recover, and both occipital lobes were found to be infarcted, the ipsilateral to a greater extent than the contralateral.

CASE 2.—E. C., a woman aged 29, referred by Dr. H. P. Macey of Frelighsburg, P. Q., with the diagnosis of hemorrhage of the middle meningeal artery, was brought to the hospital about sixteen hours after her accident. The evening preceding admission she had tripped going downstairs. She was momentarily unconscious and on recovering insisted that she felt no ill effects; after a few minutes she went to bed without assistance. The next morning she was found in deep coma, breathing irregularly, and the right pupil was dilated and fixed. She was transferred to the hospital by ambulance over a distance of 90 miles, and during the journey the left pupil also became dilated and fixed and generalized spasms, suggestive of decerebrate rigidity, occurred periodically.

An emergency operation was performed and a large extradural clot was removed from the right temporal region and the bleeding artery ligated. There was slight improvement immediately after the operation. She did not recover consciousness and died thirty-six hours later. At necropsy there was herniation of the hippocampal gyri over both free edges of the tentorium of the cerebellum. This was more marked on the right side. There were infarcted areas in both occipital lobes, also more marked in the ipsilateral hemisphere.

Hippocampal herniations causing palsy of the third nerve occur not only in head injuries but also in intra-

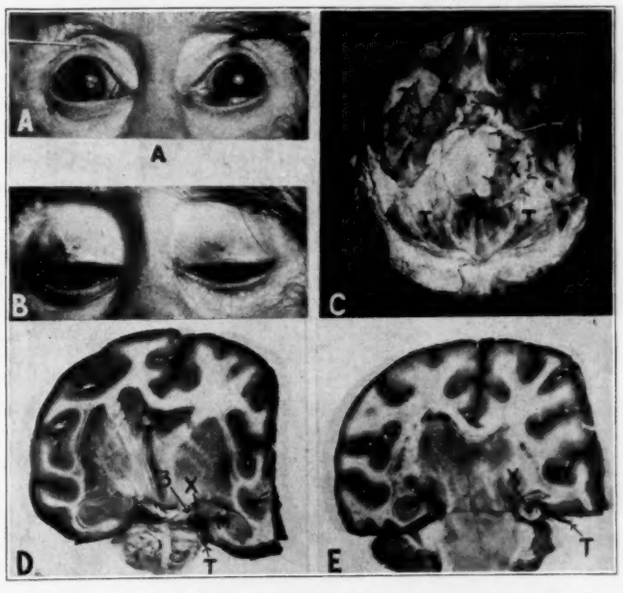

Fig. 3.—Illustrating a typical result in an acute experiment. *A*, dilatation and fixation of the left pupil and external strabismus of the left eye following ipsilateral extradural compression. *B*, later stage showing ptosis of the left upper lid. *C*, herniation of the ipsilateral hippocampal gyrus (*X*) over the free edge of the tentorium (*T*). The arrow heads outline the limits of the herniation. *D*, section showing the hippocampal gyrus (*H*) herniating over the anterior end of the free edge of the tentorium (*T*) at the point *X*, and pressing on the third nerve (*3*). *E*, section taken more posteriorly showing the herniation (*X*) forming a wedge between the free edge of the tentorium (*T*) and the midbrain.

cranial expanding lesions, and with these herniations the circulatory changes may occur in the areas supplied by the posterior cerebral artery. The following case resembles one described by Meyer:[6]

6. Meyer, Adolf: Herniation of the Brain, Arch. Neurol. & Psychiat. **4**: 387 (Oct.) 1920.

CASE 3.—N. D., a man aged 54, was referred by Dr. Philippe Panneton of Montreal as suspected of having an intracranial tumor. For two months the patient had had right frontal headache and had vomited on three or four occasions, and over this period personality changes had developed. He was very uncooperative on admission to the hospital. Early bilateral papilledema was present and there was a slight weakness of the left lower part of the face and some awkwardness of the left hand. A presumptive diagnosis of a right frontal expanding lesion was made. During the evening prior to the day planned for operation he was given an enema. As he was expelling this he fell back unconscious, and the right pupil gradually dilated and became fixed.

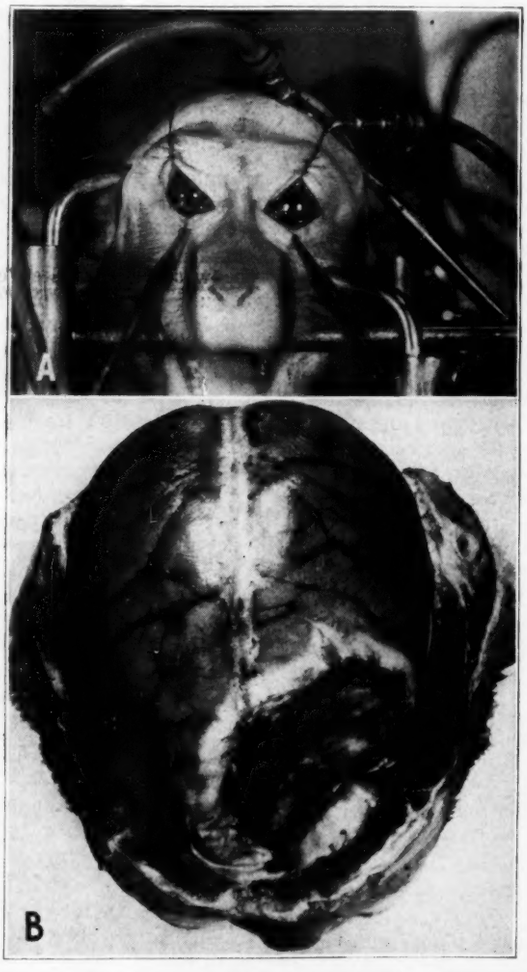

Fig. 4.—The result in an experiment of acute compression. *A*, animal under anesthesia with head in Gage head holder and Forbes window in place. As a result of extradural compression on the left side, the left pupil is dilated. *B*, dissection to show the site of and the deformity caused by the compression in this animal.

Operation was performed as an emergency measure about two hours after the pupil became dilated and fixed, and a compact mass composed of four heavily encapsulated abscesses was removed *en bloc* from the inferior portion of the right frontal lobe. Although there was slight general improvement following operation, the patient did not recover consciousness, and he died on the fifth postoperative day. During the postoperative period the right pupil remained semidilated, and it was noted that the right eye did not move as freely as the left.

At necropsy there was herniation of both hippocampal gyri over the free edges of the tentorium cerebelli. This was more marked on the right side, and the right oculomotor nerve was discolored at the point of compression. There was an area of infarction in the medial aspect of the right occipital lobe. In spite of the fact that one of the abscesses was opened and evacuated at the time of the operation, there was no evidence of meningitis or infection of the wound.

The extradural compression in the experimental acute herniations was obtained through the use of a Forbes window screwed tightly into a trephine hole in the skull, the position of which varied in different animals between the frontal, parietal and temporal regions. After the dura had been separated from the calvarium for a short distance around the trephine hole, Ringer's solution was allowed to flow in, and the pressure exerted could be altered and recorded at all times. The animals were under light dial anesthesia with the head held in the Gage head holder.

It was possible to produce at will ipsilateral pupillary dilatation and to watch the pupil return to normal on release of the pressure. After the pressure had been kept at a level sufficiently high to hold the pupil in complete dilatation and fixation, the animals were killed. Ipsilateral hippocampal herniation was found as a routine at necropsy. The herniation was great in the animals showing marked pupillary change and less extreme in those showing lesser degrees of involvement of the third nerve. The following is a representative result of an experiment in acute compression:

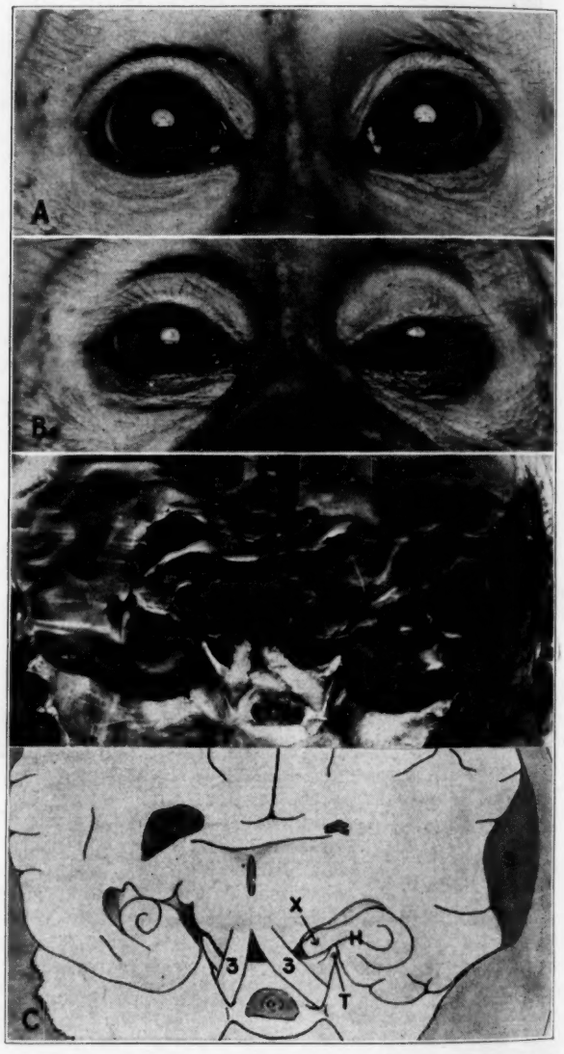

Fig. 5.—A typical result in an experiment in chronic compression (experiment 2): *A*, dilated and fixed pupil in the conscious animal, the result of ipsilateral cerebral compression. *B*, dilated and fixed pupil and ptosis at a later period when pressure had become greater. *C*, dissection with accurate tracing below showing the artificial extradural expanding lesion (*S*); the herniation (*X*) of the hippocampal gyrus (*H*) over the free edge of the tentorium (*T*). More anteriorly the herniation was pressing on the third nerve (*3*).

EXPERIMENT 1.—A trephine hole was made in the left frontoparietal region and the Forbes window screwed in (fig. 4). The extradural pressure was started at 40 mm. of mercury and gradually raised to 90 mm. of mercury during the next hour. Three and one-half hours after the experiment was started the ipsilateral pupil began to dilate and soon became fully dilated and fixed. Whenever the pressure was lowered the pupil rapidly returned to normal and again dilated when the pressure was increased. This procedure was carried out many times with the same result. The pressure was then kept at 90 mm. of mercury for eight hours, at the end of which time the animal was killed. At necropsy a herniation of the hippocampal gyrus was found over the anterior end of the tentorium pressing on the third nerve.

In order to produce chronic extradural compression that would be progressive, the dura was stripped from the calvarium and a hygroscopic material, either recently moistened saraka seeds or gum tragacanth, was packed between the bone and the dura. The trephine opening was then closed by screwing a tight-fitting, threaded, flat metal disk into it. The scalp was sutured and the animal, after recovering from the anesthetic, was carefully observed. Again, when ipsilateral dilatation was present, hippocampal herniation was found and the degree of palsy of the third nerve was dependent on the amount of herniation present. In none of the experimental animals did we find infarctions or hemorrhages. The first signs of dilatation of the pupil developed in these animals in the group with chronic compression from seven to thirty-six hours after the extradural compression was started. The animal in experiment 2 showed the first pupillary changes twenty-six hours after operation.

EXPERIMENT 2.—The dura was stripped around a trephine hole over the left temporoparietal region and saraka seeds were packed into the space made (fig. 5). During the next twenty-four hours the left pupil varied in size and was erratic in its reaction. At twenty-six hours it had begun to dilate and at thirty-four hours it was fully dilated and fixed, and there was ptosis of the left upper lid. The animal died at the end of forty-nine hours and at necropsy there was a marked herniation of the ipsilateral hippocampal gyrus over the free edge of the tentorium. This herniation was pressing firmly on the third nerve and by displacing the midbrain to the right it had put the nerve on the stretch.

COMMENT

From a study of ten patients with unilateral expanding cerebral lesions, eight of these at autopsy and ten experiments on monkeys, we have concluded that herniation of the hippocampal gyrus over the free edge of the tentorium by its pressure on the third nerve as it crosses the greater wing of the sphenoid bone can cause paresis or complete paralysis of this nerve. As evidence of the amount of pressure which the herniation is capable of producing, we have cited the interference with circulation through the posterior cerebral artery with resulting infarction of the brain in the area supplied by it.

We recognize and have studied some of the other pathologic alterations that are associated with herniations through the incisura tentorii; ipsilateral hemiplegia reported by Kernohan and Woltman [7] and by Hoen [8] and midbrain hemorrhage,[9] conditions which were not present in the cases under discussion and were not produced in our experiments.

From the literature and in discussion with others, many valuable suggestions have been obtained, shaping our work and influencing the conclusions. Our experiments, it seems to us, are more precise and the results more conclusive than those reported by Hoessly.[5] Meyer [6] and Vincent, David and Thiébaut [10] have made hippocampal herniations familiar, but they have not pointed out the associated involvement of the third nerve that has been such a striking feature in the cases and experiments we report. Mr. Geoffrey Jefferson of Manchester, England, in a verbal communication stated that he had reached the conclusion that pupillary dilatation in ipsilateral expanding cerebral lesions was due to pressure on the third nerve by the herniated gyrus and that he had removed the gyrus and had seen palsy of the third nerve clear postoperatively.

With the herniation there is distortion of the midbrain, and the question arises as to whether or not disorders of the third nerve could result from nuclear disturbances. The work of Magoun, Atlas, Hare and Ranson [11] and of Crouch [12] has helped to localize the site of the lesion. The former group of investigators obtained bilateral pupillary constriction on stimulation of points around the central gray matter of the midbrain up to the nucleus of the third nerve, but ipsilateral pupillary constriction was obtained only when they stimulated points peripheral to the nucleus. From this they concluded that there was a final partial decussation of pupillary reflex fibers in the immediate vicinity of the nucleus of the third nerve. Crouch [12] showed that each third nerve receives the majority of its fibers from the nucleus of the same side but that it receives also a certain number of fibers from the opposite nucleus. From the evidence produced by these investigators it is clear that a lesion causing one dilated and fixed pupil must lie peripheral to the nucleus and the absence of other midbrain signs would place it in the peripheral part of the third nerve. Each clinical and experimental case that we have included has presented such a lesion in the form of a herniated hippocampal gyrus pressing on the third nerve. In some of our cases the nerve was flattened or stretched and in one instance discolored.

The amount of pressure necessary to produce the herniation in the normal animal may give some idea of the pressure in cases in human beings when these herniations occur. In some of the animals it was almost as high as the systolic blood pressure, and this may aid in the explanation of the infarctions that occur in cases in man. Thus, from the clinical standpoint, when ipsilateral fixed dilatation of the pupil is present, the situation is a very grave one. If the mechanism causing the herniation is allowed to continue to act or even if the herniation is not removed after the primary expanding lesion is corrected, cerebral infarctions, pontile hemorrhages, damage to the contralateral peduncle, distortion of the midbrain and aqueduct block may occur.

Why all cases in which death is caused by increased intracranial pressure due to a supratentorial expanding

7. Kernohan, J. W., and Woltman, H. W.: Incisura of the Crus Due to Contralateral Brain Tumor, Arch. Neurol. & Psychiat. **21**: 274 (Feb.) 1929.
8. Hoen, T. I.: Hémiplégie homolatérale avec lésions intracraniennes, Bull. Assoc. de méd. de langue française **1**: 353, 1935.
9. Moore, M. T., and Stern, Karl: Vascular Lesions in the Brain-Stem and Occipital Lobe Occurring in Association with Brain Tumours, Brain **61**: 70-98 (March) 1938.
10. Vincent, C.; David, M., and Thiébaut, F.: Le cône de pression temporal dans les tumeurs des hémisphères cérébraux: Sa symptomatologie; sa gravité; les traitements qu'il convient de lui opposer, Rev. neurol. **65**: 536 (March) 1936.
11. Magoun, H. W.; Atlas, D.; Hare, W. K., and Ranson, S. W.: The Afferent Path of the Pupillary Light Reflex in the Monkey, Brain **59**: 234 (June) 1936.
12. Crouch, R. L.: The Efferent Fibers of the Edinger-Westphal Nucleus, J. Comp. Neurol. **64**: 365 (Oct.) 1936.

lesion do not show herniation as a routine and one or even all of the complications which can result, we cannot say. Since we have become more familiar with the condition at the autopsy table and have been more on the alert for the clinical manifestations, both its clinical recognition, as the result of close watch of the dying patient, and its postmortem occurrence have been more frequently recorded.

CONCLUSIONS

Herniation of the hippocampal gyrus over the free edge of the tentorium due to an ipsilateral expanding cerebral lesion can cause pressure on the third nerve as it crosses the body of the sphenoid bone sufficient to paralyze this nerve partially or completely. The dilated and fixed pupil usually is the earliest clinical sign of the herniation. The involvement of the third nerve, however, may be but one of the manifestations of the herniation. It is a danger sign not only in intracerebral space-occupying lesions but in extradural and subdural ones as well. It is emphasized in this paper because, if its significance is appreciated early, treatment may prevent the other complications.

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THE INCIDENCE OF MAJOR ALLERGIC DISEASES IN COLORADO SPRINGS

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A survey of the city of Colorado Springs with regard to the incidence of the major allergic diseases was undertaken during the last twelve months. The general impression among the physicians of this city during the last few years has been that there was a decided increase in the prevalence of hay fever and asthma. Colorado Springs and its environs have long been a mecca for health seekers. This community is widely noted for its beautiful and comfortable homes, broad clean streets, supervised play grounds and well developed public utilities. It is a center of culture, education and recreation, as distinguished from a community characterized primarily by industrial, commercial or service factors.

The population is to a large extent native born, the chief foreign groups being English, German and Canadian. There is more than the average preponderance of females over males and a larger proportion of persons in the later age groups than is characteristic of the United States as a whole.

The climate is moderately cool, with low precipitation, low humidity and a high percentage of sunshine. The mean average temperature over a fourteen year period was 48.1 F. The mean relative humidity was 46.78 per cent, and there were 13.2 inches of precipitation and 60.6 per cent of sunshine.

The city has a population of 35,000 and is situated at the foothills of the Rampart range of the Rocky Mountains at an elevation of 6,000 feet above sea level. A botanic survey of this region with the pollination periods has been previously published.[1]

On the advice of the director of the Cowles Commission for Economic Research, the city was divided into five economic districts. This was done in order to obtain the most accurate cross section of the population. The districts selected gave about equal numbers of persons in each economic group. The survey was conducted through a house to house canvass by two men from the department of biology at Colorado College whom I trained. Whenever a questionable case was encountered I investigated it.

The investigation related to the occurrence of major allergies in the general population. The minor allergies, in which the subject had recognized an allergic reaction to a specific substance with which he came in contact only occasionally, were not tabulated. The persons with minor allergies had not found it necessary to seek medical relief for their symptoms, since by avoiding the specific substances they were able to obtain complete relief. All persons with major allergies had found it necessary to seek medical relief, although in many cases a complete diagnostic allergic study had not been undertaken.

The major allergic conditions investigated were grouped under the headings hay fever, asthma, eczema, migraine, urticaria and gastrointestinal allergy. One thousand families were investigated, 200 from each of the five economic districts. These comprised a total of 3,141 persons. In reviewing the available medical literature on the incidence of allergic diseases in the United States, Coca [2] estimated the incidence of hay fever to be less than 1 per cent in the general population. Scheppegrell [3] concluded that about 1.5 per cent of the general population suffered from hay fever. Cooke and Spain [4] said that from 3 to 5 per cent of the population of New York and its vicinity had hay fever and asthma. Piness and Miller [5] reported a study on two controlled communities; the incidence of hay fever was 4.4 per cent in one and was estimated at between 3 and 4 per cent in the other, although only 1.5 per cent of the population presented themselves for treatment. Cooke and Vander Vere [6] reported about 7 per cent of the population suffering from hypersensitiveness, including even the minor degrees of sensitization. Jimenez [7] reported that 11.9 per cent of the incoming students at the University of Michigan have had eczema, hay fever or asthma. An additional 22 per cent presented a history of allergic manifestations accompanied by a family history of sensitization. Rowe [8] reported that of 400 university students 35 per cent had a personal history of probable allergy. Vaughan [9] reported that upward of 10 per cent of the population have major allergic manifestations, usually subacute or chronic, and approximately 50 per cent give a history of minor episodic allergic manifestations. Pipes [10] reported that approximately 13 per cent of the population are subject to major allergic manifestations and that 36 per cent describe minor allergic reactions.

Because of the discrepancies in the reports encountered in the literature and a belief that a survey of a

Read before the Association for the Study of Allergy, San Francisco, June 10, 1938.

1. Service, W. C.: Hay Fever Flora of the Pikes Peak Region, Colorado Med. **31**: 311 (Sept.) 1934.

2. Coca, Arthur F.; Walzer, Mathew, and Thommen, August A.: Asthma and Hay Fever in Theory and Practice, Springfield, Ill., Charles C. Thomas, Publisher, 1931.

3. Scheppegrell, William: Hay Fever and Asthma, Philadelphia, Lea & Febiger, 1922.

4. Spain, W. C., and Cooke, Robert A.: J. Immunol. **9**: 521 (Nov.) 1924.

5. Piness, George, and Miller, Hyman: J. Allergy **1**: 117 (Jan.) 1930.

6. Cooke, Robert A., and Vander Vere, H., Jr.: J. Immunol. **1**: 201 (June) 1916.

7. Jimenez, B.: J. Michigan M. Soc. **33**: 310 (June) 1934.

8. Rowe, Albert H.: Food Allergy, Philadelphia, Lea & Febiger, 1933.

9. Vaughan, Warren T.: J. Allergy **5**: 184 (Jan.) 1934.

10. Pipes, David M.: South. M. J. **30**: 1012-1015 (Oct.) 1937.

larger number of cases would justify more definite conclusions, this survey of Colorado Springs was undertaken.

SURVEY

One thousand families were investigated, and 505, or 50.5 per cent, had one or more members who evidenced major allergic manifestations. Among the 3,141 persons interviewed 711, or 22.6 per cent, presented 842 major allergic manifestations, approximately 16 per cent showing more than one. A series of studies was carried out in each of the six groups.

Hay Fever.—Of the 3,141 persons interviewed, 316 had hay fever. This is an incidence of 10.06 per cent for hay fever in the general population. Of this number forty-eight, or 15.2 per cent, had had hay fever before coming to Colorado, which leaves 8.5 per cent of the population who acquired it locally. Every person in this group had sought medical treatment for the relief of symptoms. However, only 30 per cent had received adequate allergic diagnosis and treatment. The remaining 70 per cent had sought relief in different ways, including local treatments of the nose, eyes and throat, nonspecific protein injections, cauterization, and mixed pollen injections without tests and without any adequate allergic program. Pollen was given as the cause of the trouble by 89 per cent, epidermals and dust by 3.5 per cent and food by 3.5 per cent; for the remaining 4 per cent the cause was unknown.

The ages of the hay fever patients varied from 1 to 65 years. The distribution according to the age of onset and the duration are reported in table 1 and chart 1.

TABLE 1.—*Distribution of Hay Fever*

Age, Years	No. of Cases	Per Cent	Average Age at Onset, Years	Average Duration, Years	Per Cent Duration
0-10	98	31	5.6	14.3	45.5
10-20	83	26	13.4	16.3	30.1
20-30	59	19	24.4	14.0	16.0
30-40	49	15	33.8	12.9	7.0
40-50	23	8	42.9	12.3	1.4
50-60	3	1	52.2	7.6	....
60-70	1	..	65.0	5.0	....

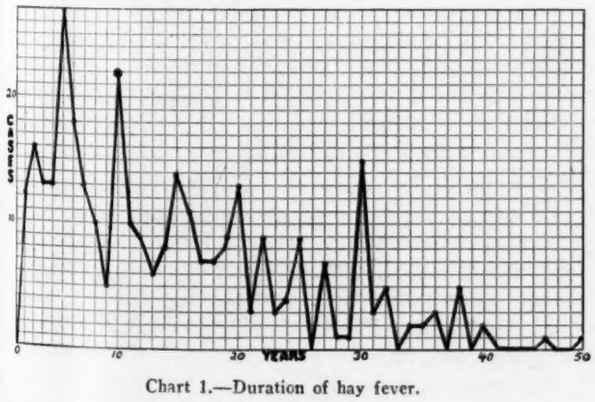

Chart 1.—Duration of hay fever.

The figures indicate that hay fever tends to manifest itself in childhood, almost 60 per cent of the patients having acquired the condition before the age of 20. There is a fall in the occurrence and in the duration in each decade. The average duration for each of the ten year periods is practically the same. Of the hay fever sufferers, 58 per cent were males and 42 per cent females.

Asthma.—Among the 3,141 persons investigated 114 had asthma. This represents an incidence of asthma in the general population of 3.6 per cent. Forty-eight had come to Colorado because of asthma. This leaves sixty-six, or 2.1 per cent, with asthma of native origin. Food was given as the cause of asthma by 39 per cent, pollen by 21 per cent, bacteria or infection by 11 per cent and dust or epidermals by 7 per cent; for the remaining 22 per cent the cause was not definitely known. All the subjects had sought medical diagnosis and treatment, although less than 30 per cent had received specific allergic diagnosis and treatment. In table 2 and chart 2 their cases are summarized as to the age at onset and the duration.

TABLE 2.—*Distribution of Asthma*

Age, Years	No. of Cases	Per Cent	Average Age at Onset, Years	Average Duration, Years	Per Cent Duration
0-10	32	28.0	4.6	17.6	43.0
10-20	24	21.2	12.9	19.2	31.6
20-30	27	23.7	22.4	15.4	15.0
30-40	19	16.7	33.2	11.4	4.4
40-50	7	6.1	44.0	15.7	2.5
50-60	3	2.6	52.7	14.3	2.5
60-70	2	1.7	67.1	7.0	1.0

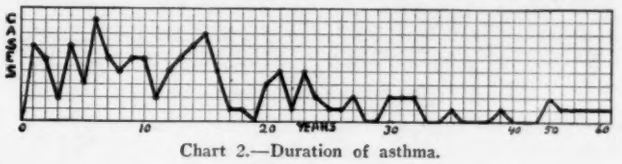

Chart 2.—Duration of asthma.

An analysis of the asthmatic group reveals that asthma is most prone to develop in the first three decades, over 80 per cent of the subjects having had it before the thirtieth year. The average duration is a little higher in the asthmatic group than in the hay fever group. There is a decline in the duration of the disease in each decade. Fifty-one per cent of the subjects were males and 49 per cent females.

Migraine.—One hundred and sixteen persons had migraine considered to be allergic in origin. In this group it was necessary to exercise considerable care in selecting the cases. Approximately 15 per cent of the subjects had been observed in the office. The remaining 85 per cent either had other allergic manifestations or presented a strong family history of migraine. Seventy-one per cent were aware that specific foods would either precipitate or aggravate an attack, although the known specific substances were not entirely responsible for the symptoms. The remaining 29 per cent were convinced that food was a factor in causing their migraine. These 116 subjects represent approximately 3.7 per cent of the general population. Twenty-one, or 0.7 per cent, had migraine before coming to Colorado, so that 3 per cent had acquired an allergy in residence. Their cases are summarized in table 3 and chart 3 according to age and the duration of the condition.

The figures indicate that migraine is most prone to develop in the second, third and fourth decades. The average duration of this condition was found to be considerably longer in persons in whom it developed between the ages of 10 and 20, although 43 per cent of the subjects were found to have had it for less than ten years and approximately 75 per cent for less than twenty years. Of the subjects 68 per cent were females and 32 per cent males.

Eczema.—Ninety-one persons had eczema of allergic origin, an incidence of 2.9 per cent in the population at large. Twelve had eczema before coming to Colorado, so that the incidence of eczema of native origin was 2.5 per cent. Food was either known or considered to be a factor with all but seven for whom pollen was found to be the cause. Twenty-two per cent had been studied from an allergic standpoint, with adequate food tests, and practically all were children under 5 years of age. Forty-one per cent were males and 59 per cent females. A large percentage had received local treatment, either by a dermatologist or under the direction of their own physician, and usually the history revealed that the patient improved under local treatment for a time, only to suffer an exacerbation as soon as it was discontinued. Older subjects frequently gave a history of childhood eczema. Eczema was frequently associated with other allergic conditions. The ages at onset and the duration are reported in table 4 and chart 4.

In 56 per cent of the subjects eczema had developed in childhood, and in 71 per cent it had had a duration of less than ten years. There is a progressive decline in each decade in the percentage of patients acquiring eczema. The average duration of eczema in every age group except one was less than ten years. However, in going over the individual histories it was found that the duration varied from a few months to forty-one years. This group of subjects, I feel, represents the minimum number of persons with eczema of allergic origin in the general population.

TABLE 3.—*Distribution of Migraine*

Age, Years	No. of Cases	Per Cent	Average Age at Onset, Years	Average Duration, Years	Per Cent Duration
0-10	8	7.0	7.7	13.1	48.3
10-20	32	27.6	14.2	22.0	25.0
20-30	27	23.3	22.8	14.8	18.1
30-40	33	28.4	34.2	9.0	4.3
40-50	12	10.3	46.2	8.7	4.3
50-60	4	3.4	51.2	12.0	....

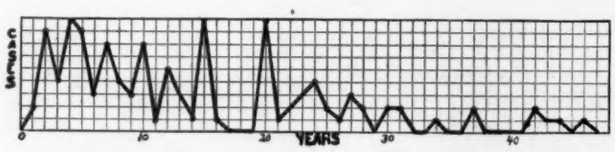

Chart 3.—Duration of migraine.

TABLE 4.—*Distribution of Eczema*

Age, Years	No. of Cases	Per Cent	Average Age at Onset, Years	Average Duration, Years	Per Cent Duration
0-10	51	56.0	3.8	9.9	71.5
10-20	14	15.4	14.3	6.0	16.4
20-30	10	11.0	22.7	12.3	8.8
30-40	7	7.7	32.7	8.0	2.2
40-50	5	5.5	45.0	6.6	1.1
50-60	4	4.4	52.5	7.5	....

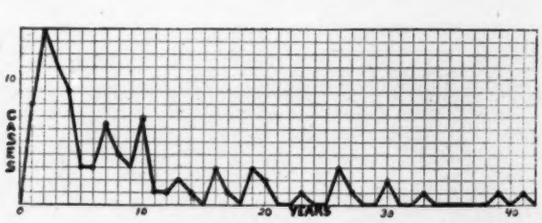

Chart 4.—Duration of eczema.

Urticaria.—The fifth group is composed of patients presenting either urticaria or angioneurotic edema. None with minor allergy are included. It was very striking the number of times that urticaria was encountered as a minor allergy. Almost 100 per cent of the persons having urticaria as a major allergy were aware of specific foods that would produce their symptoms, so that almost all those with major allergies also suffered from minor allergies. This group is composed of 103 subjects, the incidence thus being 3.2 per cent in the general population. Of these, 2.5 per cent had urticaria of native origin and 0.7 per cent had had their symptoms before coming to Colorado. Their cases are summarized in table 5 and chart 5.

Almost 50 per cent of the subjects had acquired urticaria in the first decade, and the average duration of the condition was under six years. These children did not have just an occasional rash; the attacks would usually last several weeks, and in the intervals between exacerbations as a rule they would not be completely free. Approximately 20 per cent had received allergic diagnosis and treatment. Food was listed as the predominating cause in every case. In ninety-two cases it was given as the only factor involved; in three cases epidermals and foods were blamed, and in eight the cause was listed as unknown although the patient suspected that food was a factor. Sixty-two per cent of the group were females and 38 per cent males.

TABLE 5.—*Distribution of Urticaria*

Age, Years	No. of Cases	Per Cent	Average Age at Onset, Years	Average Duration, Years	Per Cent Duration
0-10	48	46.6	5.2	6.6	67.9
10-20	28	27.2	13.3	15.0	19.5
20-30	12	11.6	24.2	12.7	9.7
30-40	11	10.6	33.0	10.3	2.9
40-50	4	4.0	45.5	14.2	....
50-60	..	....	....	....	....

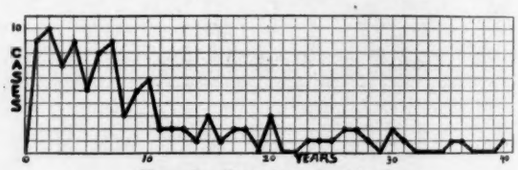

Chart 5.—Duration of urticaria.

Gastrointestinal Allergy.—Without exception food was given as the cause of this condition. None of the persons in whom inhalants were found to cause symptoms are included, although a few were encountered among the persons with hay fever. All the subjects could name one or more foods that would precipitate the symptoms, but the elimination of the known substances was not sufficient to relieve the condition. With children in the first decade, the parents were able to eliminate one or more foods from the diet because symptoms would follow their ingestion. This group is composed of 106 persons, the incidence in the general population thus being 3.3 per cent. Their cases are summarized in table 6 and chart 6.

Heredity.—The influence of heredity in allergic diseases has been the subject of investigation by a great many writers. The tendency to become hypersensitive

may be transmitted from the mother, from the father or from both parents. In this survey it was found that a history of major allergy in the first degree (father, mother, brother, sister) was obtained in 16.2 per cent of the cases from the maternal side, in 10.3 per cent of the cases from the paternal side and in 4.6 per cent of the cases from both sides. This gives a total incidence of the inheritance factor of 35.7 per cent. If the inheritance was transmitted from parent to child as a dominant mendelian characteristic, one would expect to find an inheritance factor of 50 per cent in the case of unilateral inheritance and of 75 per cent in the case of bilateral inheritance. If a comprehensive survey was to be made which would include the history of both major and minor allergy as inheritance factors, I feel certain that a factor considerably higher than 35.7 per cent would be obtained for the parents. An analysis of the 2,430 nonallergic persons showed an allergic heredity for 9.3 per cent.

COMMENT

This survey indicates that major allergy is manifested by over one fifth of the general population, and, if one combines this result with the results of Vaughan [9] and Pipes [10] on the occurrence of minor allergy, it is evident that at least three fourths of the population manifest allergy to a greater or lesser degree. Allergy then, as has been pointed out, is no longer the exception but the rule.

It will be noted that in this series the duration of allergy in each of the age groups was usually between ten and fourteen years. The duration was considerably less in cases of adequate diagnosis and treatment than in those of inadequate treatment.

In the cases of food allergy the frequency with which the elimination diet had been used was noted. Some of the patients could alleviate their symptoms by its use but as a rule it was ineffective in greatly relieving the condition. The fact that persons with major allergies

TABLE 6.—*Distribution of Gastroinstestinal Allergy*

Age, Years	No. of Cases	Per Cent	Average Age at Onset, Years	Average Duration, Years	Per Cent Duration
0-10	27	25.5	4.4	14.7	42.4
10-20	15	14.1	14.0	13.5	36.0
20-30	28	26.6	23.8	12.9	14.1
30-40	19	18.0	33.7	12.3	7.5
40-50	12	11.3	43.6	11.7	....
50-60	5	4.7	54.0	14.2	....

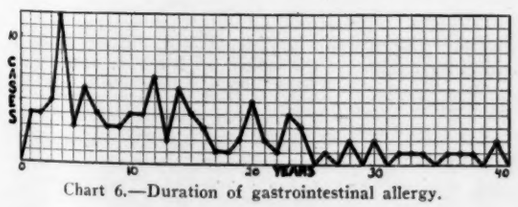

Chart 6.—Duration of gastrointestinal allergy.

are usually sensitized to a number of foods and do not manifest an immediate reaction argues against the effectiveness and reliability of the elimination diet in major allergy.

This survey revealed that 35.7 per cent of the allergic subjects had a family history of major allergy, while of the nonallergic subjects only 9.3 per cent had such a history. Vaughan [9] has hypothesized that the natural tendency of allergy is toward recovery, toward a gradual loss of sensitization. Perhaps this will be borne out by future reports; however, present reports indicate that major allergy is becoming more frequent in the general population. The various allergies when classified by age groups appear to have a limitation as to duration, and certainly with treatment the tendency is toward recovery.

CONCLUSIONS

1. A survey of the city of Colorado Springs reveals that 22.6 per cent of the general population have one or more major allergic manifestations.

2. The incidence of hay fever was 10.06 per cent, of asthma 3.6 per cent, of eczema 2.9 per cent, of migraine 3.7 per cent, of urticaria 3.2 per cent and of gastrointestinal allergy 3.3 per cent.

3. A positive family history of major allergy was obtained for 35.7 per cent of the subjects with major allergy and for 9.3 per cent of the nonallergic subjects.

4. Approximately 16 per cent of the allergic persons presented more than one major allergic manifestation.

THE LEVER AT THE TOP OF THE FEMUR AND ITS SURGICAL ELONGATION

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If one were to inquire of the average practitioner the function of the olecranon process at the elbow, I am certain one would in a large percentage of instances receive essentially the correct answer, namely that active extension of the elbow joint is produced from the pull of the triceps muscle on this lever acting purely as a lever. I feel that there would be little confusion as to the importance of the leverage of the olecranon process in the movements of the elbow and arm. The influence of function on the lever at the top of the femur (head-neck-great trochanter) is of equal importance and identical in mechanical principle with that of the olecranon process, and yet few practitioners specializing in surgery of the joints have appreciated the importance of this action and its tremendous influence on the structure and function of the hip joint; at least no suggestions have ever been made to modify its length surgically when the necessity was evident.

In a newly surgically made hip joint a postoperative dislocation may occur because of the inadequate length of this lever. The pelvis may tip upward or the femur pull inward in adduction, with varying resultant practical shortening of the limb, or weight-bearing weakness with marked limp. Such limp has often been mistaken for that of shortening of the limb, and many patients have been brought to me with a request that the limb be lengthened when there was little or no actual bony shortening.

The contrast in favor of the importance of the lever at the top of the femur is even greater, in that the olecranon process functions only to enable active extension whereas the lever at the top of the femur not only is the essential element in providing a mechanism for abduction and inward and outward rotation of the lower limb at the hip but is essential to the stabilization of the

From the Florida Medical Center.

hip joint and the active control of the weight-bearing relation between the femur and the pelvis. One muscle is inserted into the olecranon process and seven are inserted into the outer end of the lever at the top of the femur, namely the gluteus medius, gluteus minimus, obturator externus, piriformis, gemellus superior, obturator internus and gemellus inferior.

With the sole exception of adduction, all movements at the tip have to do to a greater or less degree with the pull of certain muscles on the outer end of this lever.

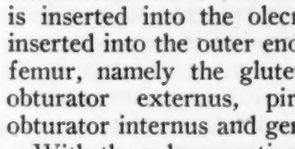

Fig. 1.—Method of elongating the lever at the top of the femur in cases of ununited fracture of the neck of the femur in which much absorption of bone has occurred because of an inadequate blood supply. The removed femoral head is transformed into a wedge and placed at *a*. It serves three purposes: (1) it holds the newly formed head firmly in the acetabulum at *c* and prevents dislocation; (2) it restores active weight bearing, and (3) it restores abduction by providing a longer lever for the gluteal muscles (*d*) to pull on.

In industry or in everyday life, if the force available to be directed on the end of a lever is inadequate and it cannot be increased, the only recourse is to elongate the lever so that the same available force will be adequate to the lifting of the corner of a building or a rock. This principle I have applied in the case of both the olecranon process and the lever at the top of the femur. That is, I have lengthened these structures to the anatomic dimension when they have been shortened by disease, by trauma or by inadequate development. In such instances it is assumed that the muscular force is physiologically normal. On the other hand, when the muscular forces which normally activate these levers have been weakened from any cause whatever, particularly infantile paralysis, it follows by the same token that the elongation of these lever structures beyond their anatomic normal dimension is equally indicated. The results obtained by such surgical procedures have been most gratifying. This principle was first applied by me over twenty years ago to ununited fractures of the neck of the femur with extensive absorption of bone in my so-called reconstruction operation (fig. 1).

A shell of bone about 3½ inches long obtained from the superior and outer surface of the great trochanter is turned outward with the muscle insertions undisturbed, and into the crotch thus made fragmented grafts are packed, the purpose being to afford a longer lever for these muscles to pull on, thus preventing postoperative dislocation and restoring abduction and active weight bearing.

Other conditions for which this technic has been applied are shortening of the neck of the femur from destructive lesions such as tuberculosis, when the disease has been cured, leaving marked shortening of the neck of the femur, and old reduced congenital dislocation of the hip with the same result. In many cases there have been marked adduction deformities with resultant practical shortening, and particularly in the case of the healed tuberculous hip the teaching has been in the past either to correct the adduction by Gant's osteotomy or to correct it at the hip joint, with a supplementary fusion operation. In most instances the latter destructive operation, with loss of motion, was found necessary because repeatedly the adduction would slowly recur. The reasons why this was so have not been explained. The outstanding feature of these cases has been the shortening of the lever at the top of the femur. The adductor muscles function with their normal mechanical advantage at the same time that their antagonistic muscles are markedly handicapped in that they are pulling on a bony lever which may be less than one half its anatomic length. Is it surprising, under these conditions, that the correction of an adduction deformity by osteotomy at the lesser trochanter should recur? The indications as I see them now in such cases are to correct the deformity and then restore the abductor bone lever to its normal dimension or even to greater length. With some of these conditions, either of congenital or of pathologic origin, there has remained a bone block at the superior periphery of the hip joint which had to be removed when the lever was lengthened in order to allow freedom of motion of the hip joint.

Another important indication for surgical reconstruction occurs in cases of arthroplasty to restore motion to a bony stiff hip joint when this lever has been shortened both by the destructive lesion which produced the ankylosis and by the necessary removal of bone by the surgeon in modeling the new joint. In this instance, in the discretion of the surgeon, the lever may be lengthened at the primary arthroplastic operation to restore motion, or this procedure may be deferred to a later date. In borderline cases in which there is doubt as to whether the lever is sufficiently long it is urged that the secondary procedure be deferred until the defective function of the joint proves this necessity.

My last application of this kinesiologic principle has been demonstrated in cases of infantile paralysis in which there has been a weakening of the group of muscles attached to the tip and outside of the great trochanter. In this instance one would immediately reason that the lever is of normal physiologic length, but this has not been found to be the case at all. The weakening of the trochanter muscles has resulted, as one might expect, in the general lack of development of the whole upper end of the femur, and this has caused a diminution in the longitudinal dimensions of this lever. Therefore the indications for its elongation are double; namely, the muscular force which activates it has been lessened below functional capacity, and at the same time the lever has become shortened. The surgical results from reconstructing this lever, as might be anticipated, have in many cases been brilliant.

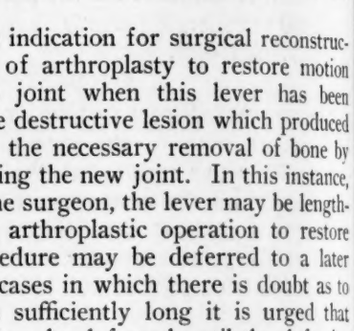

Fig. 2.—Method of elongating the lever at the top of the femur in cases of weakness of the abductor or weight-bearing muscles, whether from infantile paralysis or other cause. A rectangular graft is obtained from the outer crest of the ilium, including as much of the outer table of the ilium as is found desirable (*a*). This is placed at *b* and firmly holds the bony structures in the elongated position. Care should be taken in freeing the top and outer portion of the great trochanter not to sever or unnecessarily damage any of the short trochanteric muscles.

TECHNIC

1. For many years following the introduction of my reconstruction operation of the neck of the femur, described in 1919, I have devoted myself intensively to

the development of the simplest surgical technic for all occasions in lengthening this lever. The availability of bone graft material is almost a determining element in the design of the special technic. The object is to have a massive graft which not only will serve eventually to fuse in place and reconstruct the lever but will immediately elongate the lever by its mass support. In the instance of ununited fracture of the neck of the femur, the removed head of the femur serves this purpose admirably. Formerly I always threw this away and used numerous small fragmented bone grafts, but during the past ten years or more I have been able to shape it quickly into the form of a wedge, using a motor saw and osteotome for this purpose. This massive wedge, when properly placed, immediately supports the lever in its elongated state and serves forthwith to prevent the dislocation of the newly formed femoral head from the acetabulum. Because of its extensive mass, it allows ample leeway in shaping a wedge of the desired size, and only three weeks of postoperative immobilization has been necessary. Because of this, free motion of the joint is much more easily restored. When fragmented grafts were used, it was even necessary to immobilize by double plaster of paris spica cast for a long period, at least eight weeks, in order to allow time for the grafts to unite firmly and consolidate the new lever, so that postoperative dislocation of the newly made hip joint would not occur (fig. 1).

2. In cases of shortening of the neck of the femur from ancient cured disease, from congenital malformation or from former arthroplasty in which this lever has been shortened, both by the destructive lesion that produced the osseous tuberculosis and by the removal of bone by the surgeon made necessary in modeling a new joint, the bone graft material can be obtained from the side of the ilium, always high up at the crest so as not to disturb either the muscular structure or its elevation. It can also be obtained from the anterior internal surface of the tibia, the most satisfactory store house of bone graft material. At the discretion of the surgeon this lever may be elongated during the primary operation to produce motion in a bony stiff joint. In this instance the side of the ilium has been already laid bare and therefore the material for the elongation of the lever can be easily obtained.

Formerly I obtained the grafts from the side and crest of the ilium in the form of two "pieces of pie" (segments of a circle) consisting of the outer half of the crest and the outer iliac table, of proper shape and size to fill in the bony wedge cavity which is produced by the turning out of the shell bone from the tip and side of the great trochanter. These may be fastened together with a bone graft peg.

The technic, however, which I employ at present is to obtain the graft in the shape of a square or a rectangle from the outer table of the ilium, including the outer half of the crest. This is placed in accordance with and immediately supports firmly the lever in the elongated state (fig. 2).

The technic in cases of infantile paralysis is precisely the same. However, one caution should be firmly adhered to; that is, if the graft is obtained from the outer surface of the ilium it should be from the extreme upper anterior border, including a portion of the crest, so that the weakened muscles will not be disturbed more than is absolutely necessary.

Clinical Notes, Suggestions and New Instruments

AN IMPROVED METHOD OF APPLYING MOIST HEAT TO INFECTED EXTREMITIES

J. R. COCHRAN JR., M.D., CHICAGO

It is customary in the treatment of infections of the extremities to utilize the beneficial effects of moist heat. The routine at St. Luke's Hospital has consisted in wrapping the arm or leg in double folded blankets which have been heated in the steam sterilizer, encasing them with a sheet of oiled silk and wrapping both with a bath towel. The blanket is applied at the highest temperature that the patient can tolerate and is allowed to remain for two hours. Thus in the application of continuous moist heat the fomentations are changed by the nurses from eight to twelve times a day.

For several reasons this method, which is not unlike that used in many other hospitals, is inconvenient and unpractical and, as will be shown, fails to maintain an atmosphere of moist heat for more than a fraction of the total time applied. More specifically, it is next to impossible for the nursing staff to maintain the two hour schedule of changing the foments on the busy surgical floors. It is also common to find the bedding around the foment soaked after several changes, owing to the fact that the oiled silk becomes cracked with use and also because of the haphazard method of wrapping. In practice it was observed that the constant changing of the fomentations defeated the attempts at immobilization of the infected extremity, a factor considered most important in the therapy of infections. But most important of all the objections was that voiced by numerous patients, particularly by members of the staff who at various times have been under treatment for infected hands; namely, that the foments failed to keep the part warm for the duration of the application.

To test the validity of some of these observations, temperature recordings were taken on a group of patients by placing a mercury bulb thermometer in the fomentations in such a way as to record the mean temperature of the foment layers. In an attempt to evaluate the results, an arbitrary base line of 100 F. was selected, this temperature being several degrees above the average temperature of the skin and therefore suitable for elevating the temperature of the cutaneous layers and also low enough to obviate burns. The results of our readings have indicated that the routine being used failed to maintain the temperature above the base line for more than from 10 to 15 per cent of the two hour period and that in twenty-four hours of continuous therapy the infected area was actually heated about three hours. At the end of one hour the temperature averaged 93 F., and at the end of two hours 90 F.

An alternative method occasionally used here was then tested out. This consisted in placing a light cradle or electric baker over the fomentations. Readings on a series of four patients receiving repeated fomentations showed that with two 60 watt bulbs the temperature never reached the base line, while with three 60 watt bulbs the temperature could be raised to 100 and no further. Likewise, during each two hour period approximately 25 per cent of the heating effect was lost while the nurse changed the blankets with the cradle removed. The patients complained of aching of the part during the latter part of each treatment when the blanket had dried.

It was then decided that the latter method might be improved by applying the fomentations in a different manner designed to obviate the objections outlined. After several trials the following method was adopted:

The extremity is first covered with petrolatum or preferably with the antiseptic oil used in the nursery. This serves to prevent excess damage of tissue and to hinder the seeding of infection to adjacent hair follicles. The extremity is then wrapped completely around twice with double thickness hot foment blankets. Into the more superior portion of the blankets

are incorporated two rubber tubes perforated at intervals of about 1 inch. These tubes are connected to a 2 foot tube by a Y connection, and the single tube is attached to a funnel strapped to the light cradle. The extremity is arranged so that the proximal part of the tube is higher. The spacing of the perforations and the inclination of the tube serve to distribute the water evenly throughout the foment. Two thicknesses of oiled silk are then wrapped round the blanket and the edges turned on themselves and clipped with large spring paper clips. The ends are carefully folded in to make it water-tight. By means of careful wrapping the bed can be kept dry and comfortable all day. A light cradle is then put over the extremity and covered with a blanket to insulate it against loss of heat.

Temperature recordings taken in more than twenty cases indicate that it is possible to maintain a temperature slightly over 100 F. over long periods of time with one 60 watt bulb. With two 60 watt bulbs temperatures went as high as 112 F. It is inadvisable to use more than 100 watts of energy for fear of burning the patient.

In practice the majority of patients are allowed to moisten their own fomentations as they see fit. Otherwise the nurses pour between 30 and 50 cc. of water into the funnel every hour. The foments are changed only as desired for inspection of the infected area. The extremity is therefore immobilized for long periods.

St. Luke's Hospital.

A CASE OF LEAD ENCEPHALOPATHY IN A BREAST-FED INFANT DUE TO THE USE OF LEAD NIPPLE SHIELDS BY THE MOTHER

MILTON RAPOPORT, M.D., PHILADELPHIA, AND ATHOL S. KENNEY, M.D., NEW ORLEANS

Since the report by Wilcox and Caffey in 1926 [1] of two cases of lead poisoning in nursing infants due to the use of lead nipple shields by the mothers, the potential danger of these devices as a source of plumbism in the nursing infant has been noted. Although lead poisoning is being recognized with increasing frequency in infancy, being due to the ingestion of paint, the use of lead-containing cosmetics by the nursing mothers (Japan), the burning of storage battery boxes and the like, we have found no cases reported attributable to nipple shields since the report of Wilcox and Caffey.

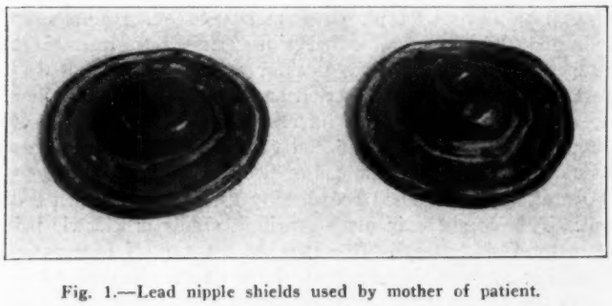

Fig. 1.—Lead nipple shields used by mother of patient.

However, when one considers the fact that the lead nipple shield must be in fairly common use, since it is recommended as a remedy for fissured nipples by many of the standard textbooks of obstetrics,[2] it is quite possible that there are unrecognized cases of lead poisoning in infants due to the use of such shields.

It is interesting to note that the harmlessness of the lead nipple shield to the infant is stressed in the circular found in the container of the lead nipple shields sold in this country. This circular read as follows:

Dr. Wansbrough's
CELEBRATED
Metallic Shields
For the Prevention and Cure of SORE NIPPLES

Highly recommended by Dr. Laycock and the most eminent medical men throughout the United Kingdom

The merit of the invention is now so fully understood, and the good results from its application so well established by the experience, both of the Medical Profession, and of numerous Mothers who have been afflicted with Sore Nipples, that the Manufacturer feels he is doing a duty to society by giving as much publicity as possible to a discovery which has proved so great a blessing in these distressing cases.

The attention of the Medical Profession was first drawn to this subject by DR. WANSBROUGH (the inventor), in a paper published in the *Lancet*, July, 1842; and he afterward brought it before the Society of Arts, in 1843, when he read a paper to that Society entering fully into the nature of the above malady, and the philosophy of this instrument, both as a preventive and a cure.

The following is an extract from the above Paper, which he then delivered and which is published in their transactions:

"Among all the various remedial means that have been proposed for this painfully distressing affection, none have hitherto proved sufficiently effectual, either as a preventive or cure. The subject has occupied the attention of Medical Men for a considerable period, and numerous have been the remedies recommended and applied; but they have failed in the desired result. Now, Gentlemen, *this little Apparatus which I have the honor to submit to your notice possesses these great desiderata.* As a preventive, it is requisite only to say, that it effectually accomplishes the desired end by being applied immediately after delivery. Its curative character consists *in the nipple being immersed in a solution of Lactate of Lead, formed by the Lactic Acid in the milk acting upon the metal;* the whole contained in a reservoir, as it were, in the cavity of the Shield, which prevents pressure, and by adhering closely, may be worn with the dress. I have used these Sheilds in the most severe cases, in a somewhat extensive practice, for upwards of a quarter of a century, *even where the Nipple has suppurated and sloughed to the extent of half its volume, threatening the destruction of the whole,* AND I HAVE NEVER EXPERIENCED A FAILURE! Yes, Gentlemen, this little, apparently trifling, and intrinsically valueless article, because formed of a material in the lowest scale of metallurgy, possesses, nevertheless, most powerful properties when put to the proof."

DIRECTIONS

For the prevention and cure of Sore Nipples, these Shields should be applied as soon after delivery as possible, and in using them the only attention required is to wipe the Nipple previously to nursing, and apply the Shield again immediately afterwards. *They are in no way likely to be injurious to the infant.*

Should the edge of the Shield become inverted, it may be instantly restored by being laid on a flat surface, and rubbed round with the finger.

In this report we are presenting the case of a 3½ months old breast-fed infant in whom a severe lead encephalopathy developed as a result of the use of lead nipple shields by his mother.

History.—N. V., a white male infant, aged 3½ months, was admitted to the wards of the Children's Hospital Dec. 19, 1936, with a provisional diagnosis of meningitis.

The family history was inconsequential, the patient being the only offspring of young and healthy Italian parents. He was born in a Philadelphia hospital after an uneventful full term pregnancy and normal labor. The birth weight was 7 pounds 13 ounces (3,545 Gm.).

The past history showed a normal gain of weight until the onset of the illness leading to admission. About one month prior to admission a mild infection of the upper respiratory tract developed, which subsided within a few days. Feeding presented no difficulty, the child having been fed solely on breast feedings every three hours. Orange juice and cod liver oil supplements were added at the age of 1 month and continued in adequate amounts.

The illness leading to admission to the hospital began abruptly on the afternoon of the day prior to entry, being ushered in by projectile vomiting. The vomiting recurred several times that day, and the following morning generalized clonic convulsions developed. He was seen twice that day by a physician, who prescribed for an "upset stomach" and ordered the infant to have two enemas and a mustard bath. His condition remained unchanged, the clonic convulsive seizures recurring at frequent intervals, and between the convulsive episodes he remained tonic and unconscious. He was seen that evening by one of us (M. R.) and a tentative diagnosis of meningitis was made. Following the visit he was referred to the hospital for admission.

From the Department of Pediatrics, University of Pennsylvania School of Medicine, and the Children's Hospital of Philadelphia.

1. Wilcox, H. B., and Caffey, J. P.: Lead Poisoning in Nursing Infants: Report of Two Cases Due to Use of Lead Nipple Shields, J. A. M. A. **86**: 1514 (May 15) 1926.

2. De Lee, J. B.: The Principles and Practice of Obstetrics, ed. 6, Philadelphia, W. B. Saunders Company, 1933, chapter 67, p. 964. Edgar, J. C.: Practice of Obstetrics, ed. 6, Philadelphia, P. Blakiston's Son & Co., 1926, part VII, p. 528. Schumann, E. A.: A Textbook of Obstetrics, Philadelphia, W. B. Saunders Company, 1936, chapter 39, p. 633.

Physical Examination.—The temperature was 97.8 F., respirations ranged between 48 and 60 and the heart rate was 120. The patient was well developed and well nourished and weighed 12 pounds 3½ ounces (5,543 Gm.). His length was 55 cm. and the circumferences of his head, chest and abdomen were 40, 41, and 43 cm. respectively. At the time of the examination he was undergoing a generalized clonic convulsive seizure of moderate severity. Breathing was rapid and stertorous. The skin was pale and the extremities were cold and clammy.

The contour of the head was normal. The anterior fontanel was patent and tense but not bulging. There was no retraction of the head, and no definite nuchal rigidity was present. Tonic reflexes of the neck were elicited.

Pandy's reagent showed a moderate increase in globulin; the cell count totaled 5 per cubic millimeter—all lymphocytes. A stained smear and later culture both proved to be negative. Another tap done five days later showed exactly the same changes.

Because of our failure to detect any evidences of infection, and because of the increased amount of globulin in the spinal fluid, lead poisoning was suspected. The mother was recalled the following morning for further questioning as to a possible source of the ingestion of lead. She stated that during the puerperium her nipples had cracked and on leaving the hospital she had been advised to use lead nipple shields. Her husband had obtained these after a prolonged search among at least a dozen drugstores. They were worn constantly between nursings, the nipples being cleansed with boric acid solution before and after each feeding.

Results of Analysis of Patient's Blood During Stay in Hospital

Dates	Red Blood Cells, Millions	Hemoglobin (Sahli) per Cent	Reticulocytes, per Cent	Stippled Cells, per Cent	White Blood Count	Differential Counts: Polymorphonuclears	Lymphocytes	Monocytes	Eosinophils	Basophils	Transfusions	Comment
12/20/36	3.00	55	...	6.0	21,000	50	39	2	..	..	.....	Day after admission
12/21/36	....	..	4.0	...	.....	..	..	..	..	..	.....	Convulsions stopped
12/22/36	....	55	7.6	8.0	.....	..	..	..	..	..	.....	Diarrhea developed
12/23/36	....	..	11.0	8.6	.....	..	..	..	..	..	.....	
12/24/36	2.96	53	...	5.0	5,500	62	30	8	..	..	.....	Diarrhea stopped
12/25/36	....	54	...	...	.....	..	..	..	..	..	.....	Nasopharyngitis, convulsions recurred
12/26/36	....	45	7.0	5.0	.....	..	..	..	..	..	.....	
12/27/36	....	..	6.0	4.2	.....	..	..	..	..	..	60 cc.	Convulsions stopped
12/28/36	....	62	5.0	3.1	.....	..	..	..	..	..	90 cc.	
12/29/36	....	75	4.0	2.8	.....	..	..	..	..	..	.....	
12/30/36	....	70	2.4	3.1	.....	..	..	..	..	..	.....	
12/31/36	....	78	2.0	1.1	.....	..	..	..	..	..	.....	
1/ 1/37	4.4	72	...	...	18,400	42	58	..	..	..	.....	Bilateral otitis developed
1/ 5/37	....	85	1.4	0.3	.....	..	..	..	..	..	.....	
1/ 6/37	....	86	0.3	0.0	.....	..	..	..	..	..	.....	
1/ 7/37	....	..	0.3	0.0	.....	..	..	..	..	..	.....	
1/ 8/37	....	..	0.5	0.0	.....	..	..	..	..	..	.....	
1/ 9/37	....	..	0.7	0.0	.....	..	..	..	..	..	.....	
1/10/37	....	68	...	...	.....	..	..	..	..	..	.....	
1/11/37	....	..	0.6	0.0	.....	..	..	..	..	..	.....	
1/12/37	....	..	1.0	0.0	.....	..	..	..	..	..	.....	
1/13/37	....	..	2.4	0.8	.....	..	..	..	..	..	.....	Direct van den Bergh test positive
1/14/37	....	..	1.8	0.3	.....	..	..	..	..	..	.....	
1/15/37	....	..	2.2	0.3	.....	..	..	..	..	..	.....	
1/16/37	....	..	0.6	0.0	.....	..	..	..	..	..	.....	
1/17/37	....	75	...	...	.....	..	..	..	..	..	.....	
1/18/37	....	..	2.2	0.4	.....	..	..	..	..	..	.....	
1/19/37	....	..	2.2	0.3	.....	..	..	..	..	..	.....	
1/24/37	....	68	...	...	.....	..	..	..	..	..	.....	
1/25/37	....	..	1.6	0.3	.....	..	..	..	..	..	.....	
1/28/37	....	..	2.8	0.4	.....	..	..	..	..	..	.....	
1/30/37	....	..	2.2	0.3	.....	..	..	..	..	..	.....	
1/31/37	....	62	...	...	.....	..	..	..	..	..	.....	
2/ 2/37	....	..	3.0	0.0	.....	..	..	..	..	..	.....	
2/ 3/37	4.2	70	3.2	0.0	13,700	31	60	2	4	3	.....	Platelets 570,000
2/ 5/37	....	..	3.0	0.0	.....	..	..	..	..	..	.....	
2/ 8/37	....	..	1.6	0.0	.....	..	..	..	..	..	.....	
2/10/37	....	..	4.4	0.0	.....	..	..	..	..	..	.....	Icteric index 34; indirect van den Bergh test 2.1 units per liter
2/12/37	....	..	2.0	0.0	.....	..	..	..	..	..	.....	
2/28/37	4.3	70	...	0.0	10,950	37	60	3	..	..	.....	

The pupils were equal in size and were dilated. They responded sluggishly to light. A rapid horizontal nystagmus was present, with the quick component to the left. Opthalmoscopic examination revealed normal fundi.

The ears and ear drums were entirely normal. The nose was normal. The mouth was firmly closed and could be opened only with force. No teeth were present. The tongue, mucous membranes, tonsils and pharynx were entirely normal.

The chest was symmetrical and the heart and lungs were normal.

The abdomen was moderately distended; the liver edge was palpable 1.5 cm. below the right costal margin, and the spleen 2 cm. below the left costal margin. The kidneys were not palpable.

The arms were flexed and rigid; the hands were tightly clenched. The legs were extended and rigid. A right talipes equinus was present which had first been noted at birth.

The tendon reflexes (achilles, patellar, biceps and triceps) as well as the abdominal reflexes were hyperactive. A marked ankle clonus was elicited on the right. The Kernig sign was present in both lower extremities.

Immediately following examination a lumbar puncture was done. The pressure was found to read 18 mm. of mercury; Routine examination showed an erythrocyte count of 3,000,000; the leukocyte count was 21,000 and the hemoglobin content 55 per cent (Sahli). Considerable coarse basophilic stippling of the red cells was found in the smear. X-ray examination showed wide dense zones of temporary calcification in all the long bones (fig. 2).

In view of the established source of the ingestion of lead, and the hematologic and radiologic changes, a definite diagnosis of lead encephalopathy was made.

Treatment and Progress.—The convulsions were controlled by the rectal administration of 2½ grains (0.16 Gm.) each of sodium bromide and chloral hydrate every six hours. In addition one-half grain (0.032 Gm.) doses of sodium phenobarbital were given hypodermically twice a day. By the second hospital day the convulsions and vomiting had ceased entirely. However, the infant continued to be hypertonic and showed a generalized hyperreflexia. At this time diarrhea developed and he passed about four loose greenish stools daily. This was treated by dietary means, a dilute skim milk mixture being fed to which had been added 5 per cent rice flour. The diarrhea

subsided after three days. During the interval the administration of sedatives was continued.

At this time there was a recurrence of the convulsive seizures, and evidence of a nasopharyngitis was found. A second lumbar puncture was done, revealing a similar amount of globulin. It

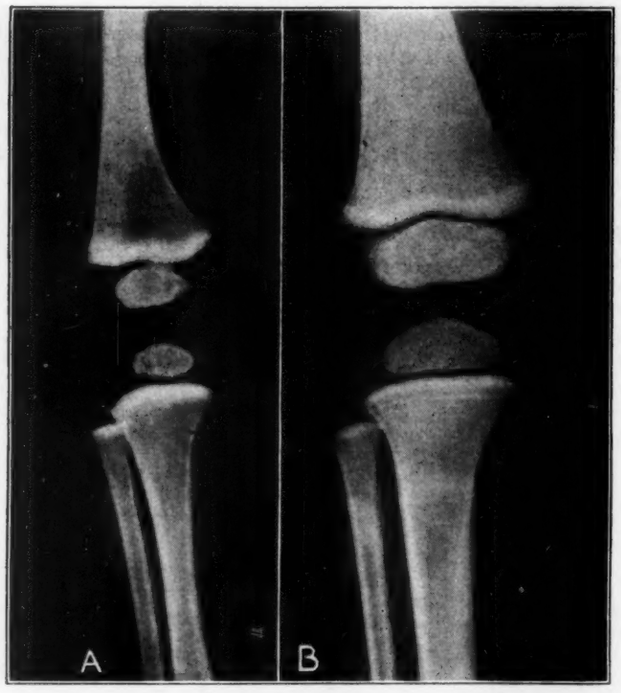

Fig. 2.—Appearance of tibia: *A*, on admission of patient to hospital (at the age of 3½ months), showing line of increased density of end of bone. *B*, at 22 months of age, showing vestige of lead line about 2 cm. from the metaphysial end.

was assumed that the diarrhea and nasopharyngitis were responsible for the return of the encephalopathic symptoms, the acidosis so frequently encountered in diarrhea probably pro-

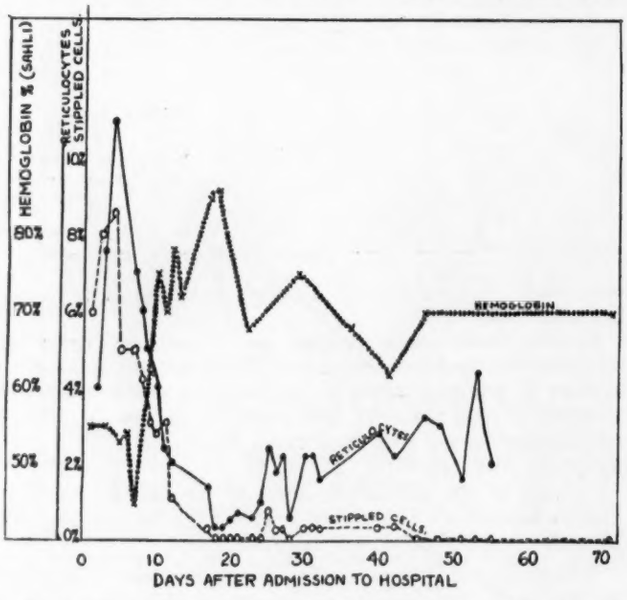

Fig. 3.—Fluctuations and relationships of hemoglobin, reticulocytes and stippled cells.

ducing a mobilization of lead from the bones and increasing the amount in the general circulation.

Measures were now employed in an attempt to deposit the circulating lead in the bones. To this end, 40 grains (2.6 Gm.) of disodium phosphate and 20 drops of viosterol were given daily in divided doses. In addition two blood transfusions of 60 and 90 cc. were given on successive days to correct the anemia. Twenty-four hours after the institution of this therapy the convulsions had ceased and did not recur for the remainder of the infant's stay in the hospital. The disodium phosphate was discontinued after fifteen days. The viosterol was continued during the entire hospital stay. An acute suppurative bilateral otitis media, which developed on the twelfth day and which required a bilateral myringotomy, produced no exacerbation of his symptoms, the ears healing uneventfully after a period of three weeks.

In the accompanying table are summarized the results of examination of the infant's blood during his stay in the hospital. The numerous reticulocyte counts and counts of stippled cells were made to determine whether there was any relationship between the two (fig. 3). During the height of acute symptoms when the hemoglobin was low and there were fairly numerous reticulocytes, there were numerous cells showing basophilic stippling. When the hemoglobin had been raised to 86 per cent the number of reticulocytes declined and no stippled cells were seen. As the number of reticulocytes increased, presumably in response to a fall in hemoglobin, stippled cells were again seen. Even though the number of reticulocytes continued to be increased, the stippled cells disappeared from the blood. This last event was interpreted as an indication that lead had been driven from the blood stream and deposited in the bones, so that it could not produce basophilic stippling. This sequence of quantitative changes in reticulocytes, stippled cells and anemia is graphically shown in figure 3.

The inference that was drawn from these blood studies was that in the presence of lead circulating in the blood stream there was an apparent direct correlation between the number of reticulocytes and the number of stippled cells.

The infant remained in the hospital for a total period of eleven weeks and on discharge appeared to be in good condition. His weight at that time was 16 pounds 2 ounces (7,314 Gm.). He was active and happy, could sit with a little support and reacted normally to his environment. Both liver and spleen remained palpable to the same extent as on admission.

Fig. 4.—Patient at 22 months of age, June 1938.

Following his discharge from the hospital, the infant continued to grow and develop in normal fashion. On reexamination at 11 months of age the infant was very well nourished and well developed, weighing 22¾ pounds (10.3 Kg.). He was 29 inches (73.7 cm.) tall, had four teeth and was able to walk by himself. He had mumps at 8 months, measles at 10 months and whooping cough at 14 months, from all of which he recovered uneventfully.

In June 1938 at 22 months of age he was entirely normal physically and mentally (figure 4). Roentgenograms taken at this time showed that the vestiges of old lead lines were still visible (figure 5). At no time following his discharge from the hospital did he manifest any symptoms or stigmas which could be attributed to his lead poisoning.

SUMMARY

1. A case of lead encephalopathy in a 3½ months old breast-fed infant in which there was complete recovery, was caused by the use of lead nipple shields by the mother.

2. There is an apparent correlation between the number of reticulocytes and the number of cells showing basophilic stippling.

Bainbridge, Eighteenth and Fitzwater streets.

Special Article

DIPHTHERIA MORTALITY IN LARGE CITIES OF THE UNITED STATES IN 1938

SIXTEENTH ANNUAL REPORT

The means employed for obtaining the data for this review have been outlined in the report on typhoid deaths.[1] As has been the practice in all previous annual reviews of diphtheria and typhoid, statistics have been obtained from local health officers. As the time of the 1940 census approaches, local estimates of population become less trustworthy. They provide, however, the best available data. The rates must be readjusted in light of the facts obtained at the time of the next federal census.

As has been the case in previous articles, the local health departments report not only the total number of diphtheria deaths that actually occur in the community but also the number of such deaths occurring among nonresidents.

The fourteen New England cities (table 1) report a continued downward trend in the death rate for the

TABLE 1.—*Death Rates of Fourteen Cities in New England States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1938	1937	1936	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Springfield....	0.0	0.0	1.3*	2.1	10.3	15.4	24.9	19.1	31.3	29.6	51.3	68.2
Lynn.....	0.0	0.0	2.0	4.7	13.5	17.0	17.8	17.2	21.7	38.0	44.0	49.0
Lowell.....	0.0	0.0	8.0	9.4	10.6	16.7	23.5	20.6	31.0	59.3	44.3	36.4
New Bedford..	0.0	0.9	0.9	4.8	10.9	16.5	17.0	20.9	22.6	25.1	53.6	20.0
Providence....	0.0	1.2*	0.4	5.0	9.5	15.8	29.3	26.8	30.7	41.2	53.5	55.3
New Haven....	0.0	1.8*	0.0	0.5	1.6	7.1	14.2	14.9	22.7	15.6	54.8	74.5
Boston	0.2*	0.5	0.9	3.2	8.3	20.2	26.3	20.0	26.2	53.7	83.9	112.2
Cambridge....	0.8	0.0	0.0	1.2	3.2	8.9	12.9	23.8	25.3	46.7	71.9	58.0
Waterbury....	0.9	4.8	1.0	2.4	2.6	17.9	23.0	29.6	....	....	....	....
Somerville....	1.0	0.0	0.0	9.0	5.7	19.7	20.2	21.4	21.5	40.5	57.8	37.4
Hartford.....	1.1*	0.0	1.1	1.1	5.3	11.9	13.8	25.3	28.1	38.8	47.8	120.9
Worcester.....	1.6†	0.0	0.5*	2.9	8.6	15.5	14.1	21.3	32.2	16.5	50.3	47.8
Bridgeport....	2.0†	0.0	0.7*	1.0	11.8	19.6	23.4	23.3	26.8	34.2	63.9	79.3
Fall River.....	3.5	4.3	1.7	3.9	12.0	25.5	23.6	24.0	34.4	50.1	43.8	46.9

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

group as a whole but have been unable to approach the record of the Middle Atlantic cities, which continue to hold first place (table 16). While there were eight cities in the New England group which recorded no deaths in 1937, there were only six such cities in 1938 (Springfield, Lynn, Lowell, New Bedford, Providence, New Haven). There has occurred no death among residents in Springfield and New Haven during the past four years; none in Lynn, Lowell and Providence during the past two years. No death from diphtheria or typhoid has occurred in Lynn in two years. Lowell, New Bedford and Providence report no death from either diphtheria or typhoid in 1938. Four years has passed without a death among residents from diphtheria or typhoid in Springfield. Boston and Hartford each report two diphtheria deaths, all in nonresidents. The excellent records in Cambridge and Somerville were marred by one death among residents in each city. The total number of deaths in the area decreased from twenty-one in 1937 to seventeen in 1938 (table 16). The death rate fell from 0.79 to 0.64. In 1937, of the nine cities with the highest diphtheria death rate, two were in the New England group. In 1938 none are in this group.

The eighteen cities in the Middle Atlantic states (table 2) continue to hold first place. The group rate of 0.48 is significantly lower than that of 1937 (0.71)

TABLE 2.—*Death Rates of Eighteen Cities in Middle Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1938	1937	1936	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Rochester.....	0.0	0.0	0.0	0.7	7.5	16.9	12.7	22.1	32.4	32.3	45.9	96.6
Utica.....	0.0	0.0	0.0	1.2	13.4#	....	....	....	....	....	....	....
Erie.....	0.0	0.0	0.0	3.5	5.8	16.8	15.1	17.7	27.1	42.3	23.1	....
Elizabeth.....	0.0	0.0	0.0	4.5	13.2	19.2	19.3	14.8	51.7	42.4	60.5	79.3
Syracuse.....	0.0	0.5*	0.0	0.4	2.0	22.9	12.9	16.6	17.4	17.7	31.1	55.4
Albany.....	0.0	0.7*	0.0	2.9	7.5	12.8	10.4	20.0	31.6	26.9	....	....
Yonkers.....	0.0	0.7	0.7°	0.6	10.4	17.0	17.7	25.3	....	....	....	....
Paterson.....	0.0	1.4†	0.7	6.3	9.1	18.5	13.5	16.1	25.5	52.9	111.8	145.4
Newark.....	0.2	0.2	0.0	3.0	14.5	9.7	14.6	23.3	30.1	46.7	79.1	110.4
Buffalo.....	0.3	0.5†	1.7†	4.8	9.1	24.0	27.3	22.0	18.4	24.8	53.5	60.9
New York.....	0.3	0.8	0.5	2.2	10.7	14.0	21.8	28.0	40.0	58.0	85.8	134.4
Philadelphia..	0.5¶	0.3	0.5	1.3	11.8	16.7	22.7	24.6	34.1	50.0	100.6	119.4
Scranton.....	0.7¶	2.0¶	0.7¶	1.3	11.7	12.3	22.1	23.4	....	....	77.8‖	48.6‖
Pittsburgh....	0.9†	1.1	2.3	5.0	11.5	20.1	22.3	29.3	20.4	36.9	32.9	86.4
Trenton.....	1.6†	0.0	0.0	2.7	4.4	7.3	8.8	12.8	15.8	23.6	92.7‖	89.7‖
Jersey City...	1.8	2.1	1.2	6.0	11.5	18.4	21.0	23.2	32.6	57.9	85.4	108.6
Camden.....	2.5†	2.5†	0.8	7.7	21.9	20.3	23.2	38.8	48.9	52.6	93.8	194.0
Reading.....	5.3¶	0.0	0.9	3.8	7.3	21.1	16.9	35.7	29.2	70.1	72.0	94.1

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‖ Diphtheria deaths from Chapin's Municipal Sanitation.
Incomplete data.
¶ Diphtheria data furnished by Pennsylvania Department of Health, Harrisburg.
° Corrected rate. In review for 1936, Yonkers reported cases instead of deaths.

and 1936 (0.65). The new rate represents a new all-time low. In 1937 there were ninety-five deaths, in 1938 but sixty-four. This group of cities, which reported the lowest quinquennial average for 1930-1934 (2.50), has maintained the lowest group rate for the past four years. There are two cities in this group with a rate above 2.0 (Camden, Reading). Eight cities (Rochester, Utica, Erie, Elizabeth, Syracuse, Albany, Yonkers, Paterson) appear in the select list (table 11) with no diphtheria death in 1938. Utica reports no death in five years; Rochester and Erie report none in four years; Elizabeth reports none in three years. Utica records no diphtheria or typhoid death in three

TABLE 3.—*Death Rates of Nine Cities in South Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1938	1937	1936	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Baltimore.....	0.7†	1.3	1.2	1.7	7.6	11.4	13.5	14.2	16.1	33.0	68.1	70.0
Richmond.....	1.1*	1.1†	2.7†	3.6	6.9	9.8	5.8	7.0	9.8	24.4	17.6	59.7
Washington..	1.1	2.2	4.3†	3.9	7.1	10.5	11.9	6.9	11.2	23.5	50.9	77.9
Wilmington...	1.8	0.9	0.0	5.3	10.9	11.6	15.2	18.0	27.8	50.9	84.9	83.8
Miami.....	2.1†	3.1†	0.8*	3.8	5.4#	....	....	....	....	....	....	....
Norfolk.....	2.3	2.3†	3.1	4.6	4.1	4.3	4.1	6.7	17.0	....	....	....
Jacksonville..	2.6	2.0†	4.7	5.4	6.0#	...	...	...	....	....	....	....
Tampa.....	3.0†	2.0†	1.0*	4.8	4.6	5.2	9.5#	...	....	....	....	....
Atlanta.....	4.0†	4.1†	3.8	5.7	7.0	13.3	10.1	12.5	14.2	11.1	10.5	8.8

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
# Incomplete data.

years; Elizabeth and Erie record none in 1938. There has occurred no death among residents from diphtheria or typhoid in Erie during the past four years, and no death in Syracuse in three years. New York reports twenty-six deaths (fifty-eight in 1937), two among nonresidents. In 1937 there were no deaths among nonresidents. In contrast to the experience in New York, five of six deaths in Pittsburgh were among

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1. Typhoid in the Large Cities of the United States in 1938, J. A. M. A. **112:** 1941 (May 13) 1939.

nonresidents. These deaths occurred in Pittsburgh hospitals among sporadic cases from western Pennsylvania. In Reading there were five deaths among residents and the state health department has charged one nonresident back against this city. Of the five

TABLE 4.—*Death Rates of Eighteen Cities in East North Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1938	1937	1936	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Grand Rapids	0.0	0.6	0.0	0.3	2.0	19.6	13.5	20.0	26.6	17.2	32.4	99.2
Fort Wayne..	0.0	0.8	2.4†	3.3	5.1	13.1	6.3	....	....	....	....	....
South Bend...	0.0	0.9	0.9	1.3	....	....	....	....	....	....	....	....
Youngstown..	0.0	1.7†	1.1	3.3	10.5	18.5	11.9	40.5	33.5	28.0	17.6	28.4#
Peoria.....	0.0	1.7	2.6*	5.3	4.9	7.4	10.8	10.6	10.9#	14.0	14.6	68.0
Akron.....	0.0	2.8	1.6	2.7	4.9	10.4	18.9	27.8	21.8#	....	....	....
Milwaukee....	0.3	0.6	0.3*	2.0	8.5	11.4	19.8	27.8	26.4	22.7	51.7	116.2
Cleveland....	0.5	0.6	1.1	2.5	15.3	14.7	20.0	24.6	20.8	42.6	45.3	95.7
Toledo.....	0.6*	2.5	1.0	2.8	7.2	22.4	14.1	25.4	20.4	56.8	34.6	89.3
Canton.....	0.9	0.9	1.0*	1.7	2.9	17.5	15.1#	....	....	....	....	....
Evansville....	0.9	6.3†	2.8	3.2	3.7	13.9	14.9	16.1	21.2	13.8	18.1	69.7
Detroit.....	1.0	2.0	1.1	4.8	19.7	24.3	32.2	33.3	22.6	38.5	62.9	132.9
Columbus.....	1.8	1.9†	1.2†	3.2	4.6	8.5	7.6	12.1	10.5	11.6	28.5	56.9
Flint.....	1.9†	1.8	1.2	2.7	4.5	29.9	25.5	12.7	11.0	16.8	6.9	69.2
Chicago.....	1.9	2.3	2.5	4.3	11.7	17.5	31.2	37.9	27.0	33.9	60.7	117.3
Cincinnati....	3.2†	1.1†	1.7†	3.2	5.2	10.6	13.2	13.9	17.0	17.3	37.3	103.7
Indianapolis..	4.8†	2.7	3.0	3.1	6.6	11.7	21.4	13.5	13.3	15.9	36.4‖	97.3#
Dayton.....	5.7	1.4†	2.7	3.5	4.6	9.4	9.3	22.1	13.3	17.2	27.4	82.9

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‖ Diphtheria deaths from Chapin's Municipal Sanitation.
Incomplete data.

patients who died, one was 14 years of age, two were 11, one was 9 and one was 6. A rechecking of the protection status of school children has been instituted.

The nine cities in the South Atlantic states (table 3) report forty-three deaths in 1938, in contrast to fifty-three in 1937 and sixty-seven in 1936 (table 16). The death rate has fallen from a quinquennial average of 3.54 for 1930-1934 to 1.63 in 1938. There is no city in the area without a death during the past two years; Richmond, however, reports only two deaths in 1938, both among nonresidents. Of the nine cities in the group, five (six in 1937) report that one third or more of the deaths occurred among nonresidents. Atlanta remains the only city with a rate as high as 4.0. There is a total of eight such cities (table 9) and Atlanta records the lowest rate in the group of eight. It must be emphasized however that, of thirteen deaths in Atlanta, six were among nonresidents. Of six deaths

TABLE 5.—*Death Rates of Six Cities in East South Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1938	1937	1936	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Memphis.....	1.7†	3.8†	2.2†	6.0	5.8	9.5	11.2	11.9	13.4	6.9	10.0	28.5
Louisville....	2.5	0.3*	1.4†	6.3	4.6	10.4	9.5	9.0	....	....	39.0‖	48.6‖#
Birmingham.	2.7†	4.2†	3.5†	4.2	5.4	5.3	7.2	8.3	6.2	13.4	16.5	26.3
Chattanooga	3.3	3.3	3.3	6.8	5.9	8.7	8.9	....	....	....	....	....
Nashville.....	4.3†	3.7†	3.8†	8.2	11.8	8.0	8.9	7.3	10.3	13.9	30.1	28.4
Knoxville.....	8.6†	6.4†	6.5†	9.6	6.3	11.2	...	...	....	....	....	....

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‖ Diphtheria deaths from Chapin's Municipal Sanitation.
Incomplete data.

in Baltimore, three occurred among residents. During 1938 there was some modification in Baltimore of the previous program for securing protection of children against diphtheria through preventive inoculation of alum-precipitated toxoid. Diphtheria prevention clinics were established in all schools with at least one session a month and mothers were urged to bring preschool children to these clinics as well as to promote immunization among children of school age. In addition, a reply post card was enclosed in the usual literature sent to mothers of babies on their six months birthday for the convenience of the physician in reporting inoculations done in private practice. One result has been an increase in the number of such immunizations reported by physicians during 1938. There were 19,325 inoculations against diphtheria in 1938 as compared with 17,934 for 1937. Somewhat similar cooperation of family physicians has been obtained in many places throughout the country, especially in Michigan (Detroit), New York (Albany, Rochester), Connecticut (Hartford) and Indiana (Fort Wayne). Washington reports seven deaths, all in residents.

The eighteen cities in the East North Central states (table 4) report a decrease in the number of deaths from 186 in 1937 to 153 in 1938. The rate has decreased from 1.88 to 1.54 (table 16). While in 1937

TABLE 6.—*Death Rates of Nine Cities in West North Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1938	1937	1936	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Duluth.....	0.0	0.0	0.0	0.4	2.0	6.0	10.2	8.8	38.2	29.1	7.6	49.5
Des Moines.....	0.0	0.0	3.5†	4.3	5.2	15.1	16.6	15.1	23.8#	....	....	....
St. Paul.....	0.3	0.7	0.0	1.1	5.2	17.5	20.7	31.4	31.1	27.9	43.3	75.4
Omaha.....	0.4	0.0	2.7	4.7	6.4	22.9	35.8	15.8	24.5	20.5	28.2	82.9
Minneapolis.....	0.4	0.2*	1.6	1.7	11.9	13.4	19.9	28.3	24.4	44.6	34.0	55.0
Kansas City, Mo.	1.4	0.5*	0.0	3.2	4.7	14.4	22.8	15.7#	....	....	....	....
Wichita.....	1.9†	0.0	1.0	4.6	4.2	....	....	....	....	....	....	....
St. Louis.....	1.9†	3.2†	2.0	4.3	10.3	16.1	24.4	23.7	19.4	43.3	62.9	67.7
Kansas City, Kan.	2.3	2.3	0.8	3.7	4.6	9.8	23.1	12.4#	....	....	....	....

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
# Incomplete data.

TABLE 7.—*Death Rates of Eight Cities in West South Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1938	1937	1936	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Oklahoma City..	1.3	1.8	3.8	5.7	10.9	....	....	....	....	....	....	....
San Antonio.....	1.9†	2.7	5.0	5.6	10.3	7.7	8.7	6.7	7.6	17.1	20.6	4.4
Dallas.....	2.0†	4.3	7.3	9.7	9.8	8.3	7.4	6.9	8.1	16.9	16.0	21.8
Tulsa.....	2.5	1.4	2.1	6.8	12.5	8.3#	....	....	....	....	....	....
Houston.....	2.5	1.7	4.1	5.6	8.2	6.4	6.1	7.8	10.5	4.2#	2.4	1.8
Fort Worth.....	3.3	4.4	3.9	7.2	10.8	1.7#	2.6#	2.6	2.8	5.4	....	....
New Orleans.....	3.6†	3.9	3.9†	5.5	8.5	6.5	11.6	19.6	10.2	11.5	17.1	51.3
El Paso.....	4.9	6.5	3.9	8.0	7.3	20.0	17.6	29.2	....	....	....	....

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
# Incomplete data.

there was no city on the honor roll, in 1938 (table 4) there were six such cities (Grand Rapids, Fort Wayne, South Bend, Youngstown, Peoria, Akron). Toledo reports two deaths, both among nonresidents. The single typhoid death in this city was also in a nonresident. Of the thirteen cities (table 12) with no diphtheria or typhoid death in 1938, five (Fort Wayne, Grand Rapids, Peoria, South Bend, Youngstown) are in the East North Central group. There are two cities (Indianapolis, Dayton) with rates in excess of 4.0. Of eighteen deaths in Indianapolis, seven were stated to be in nonresidents; of thirteen in Dayton, four were in nonresidents. Detroit reports seventeen deaths, two in nonresidents; Flint reports three deaths, two in nonresidents; Chicago reports seventy deaths, two in nonresidents. Detroit and Chicago report localized-area outbreaks in districts where the protection status was unsatisfactory. In Cincinnati the proportion of deaths among nonresidents was unusually high, ten out of fifteen deaths.

The cities in the East South Central states (table 5) report a rate of 3.25, compared with 3.16 in 1937 and

2.96 in 1936 (forty-four deaths in 1938, forty-two deaths in 1937, thirty-eight in 1936). The rate in these cities is the highest for all groups. There is no city with a rate below 1.0, and Knoxville has the highest of all rates for 1938. This is due to the fact that eight deaths among nonresidents are charged to a total of eleven. The hospital facilities in the city draw a large number of nonresidents from the surrounding area. Most of the deaths occurred among residents of Knox County, in which Knoxville is situated. Four cities in this group of six report one third or more of diphtheria deaths to be in nonresidents. Of five deaths in Memphis, two were of residents. Five of the eight deaths in Birmingham were among nonresidents. Nashville reports three among residents in a total of seven. After passing through 1937 with no resident death, Louisville records nine deaths in 1938, seven of residents.

The nine cities in the West North Central states (table 6) report a continued decrease in rate (1.37 in 1936, 1.26 in 1937, 1.11 in 1938). The diphtheria deaths decreased from thirty-five in 1937 to thirty-one in 1938. Although there were four cities on the honor roll in 1937, only two (Duluth, Des Moines) remain on this list in 1938. Duluth reports no diphtheria death in three years, Des Moines none in two years. Allocations have not, however, been completed by the Iowa state health department. There is but one city in the group with a death rate in excess of 2.0 Of sixteen deaths reported in St. Louis, twelve occurred among nonresidents. In 1937 there were eleven among nonresidents in a total of twenty-seven. In 1938 three fourths of the deaths in St. Louis were in nonresidents. The influence of hospitalization policies is very evident. After two years with no death among residents, Kansas City, Mo., reports five such deaths in 1938 in addition to one death among nonresidents.

TABLE 8.—*Death Rates of Eleven Cities in Mountain and Pacific States from Diphtheria (Including Croup) per Hundred Thousand of Population*

	1938	1937	1936	1930-1934	1925-1929	1920-1924	1915-1919	1910-1914	1905-1909	1900-1904	1895-1899	1890-1894
Long Beach.....	0.0	0.0	1.3	0.8	2.6	10.4#	....	....	....	....	....	....
Tacoma.....	0.0	0.9*	0.0	3.9	9.3	12.4	7.7#	....	....	....	....	....
Seattle.....	0.3	0.8	0.8	0.4	1.4	6.6	5.5	5.2	12.5	13.4#	27.2‖	....
Salt Lake City..	0.7*	2.0*	0.0	0.3	10.1	12.5	14.5	15.1	34.2	46.0	14.8	56..#
Spokane.....	0.8	0.0	0.0	0.7	7.5	11.3	4.2	7.6	25.8	....	59.5‖	18.1
Portland.....	0.9	0.6†	0.3	1.3	6.4	11.3	6.0	12.3	12.2	20.2	....	....
San Francisco...	1.3	1.2	0.6	1.2	4.6	23.0	17.0	9.2	14.4	44.2	21.6	54.8
Oakland.....	1.9†	2.6	1.0	2.0	7.4	18.8	8.1	10.3	16.1	29.1	....	....
Los Angeles.....	2.2†	2.3†	3.5†	4.8	7.0	14.4	7.1	7.5	15.3	25.4	35.8	46.0
San Diego.....	3.7†	3.2	2.3	2.9	6.6	12.2	10.5	8.0	5.8	2.4	....	....
Denver.....	4.5	2.0	2.7	3.9	8.9	23.2	6.7	10.2	20.8	29.6	27.3	130.2

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‖ Diphtheria deaths from Chapin's Municipal Sanitation.
\# Incomplete data.

TABLE 9.—*Eight Cities with Highest Diphtheria Rate for 1938*

Atlanta.....	4.0†	El Paso.....	4.9
Nashville.....	4.3†	Reading.....	5.3
Denver.....	4.5	Dayton.....	5.7
Indianapolis.....	4.8†	Knoxville.....	8.6†

† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

TABLE 10.—*Ten Cities with No Diphtheria Deaths in 1937 and 1938*

Des Moines	Long Beach	Rochester†
Duluth‖	Lowell	Springfield
Elizabeth‖	Lynn	Utica*
Erie†		

* No diphtheria deaths in five years.
† No diphtheria deaths in four years.
‖ No diphtheria deaths in three years.

TABLE 11.—*Twenty-Four Cities with No Diphtheria Deaths in 1938*

Akron	Long Beach	Rochester
Albany	Lowell	South Bend
Des Moines	Lynn	Springfield
Duluth	New Bedford	Syracuse
Elizabeth	New Haven	Tacoma
Erie	Paterson	Utica
Fort Wayne	Peoria	Yonkers
Grand Rapids	Providence	Youngstown

TABLE 12.—*Thirteen Cities with No Diphtheria and Typhoid Deaths in 1938*

Elizabeth	Lynn*	South Bend
Erie	New Bedford	Tacoma
Fort Wayne	Peoria	Utica**
Grand Rapids	Providence	Youngstown
Lowell		

* No diphtheria or typhoid deaths in two years.
** No diphtheria or typhoid deaths in three years.

The eight cities in the West South Central group (table 7) have relinquished their unenviable position of having the highest group rate. The East South Central cities have succeeded to this position. The Southwestern cities have a rate of 2.69 for 1938, which compares favorably with the highest quinquennial average for 1930-1934 (6.55). The diphtheria deaths decreased from sixty-seven in 1937 to fifty-seven in 1938. There is no city without a death and but one city with a rate in excess of 4.0. El Paso recorded the highest rate for all cities in all groups in 1937. In 1938 there are three cities with higher rates. With six deaths in Dallas, two were among nonresidents. Of nineteen deaths in New Orleans, eleven were among residents.

TABLE 13.—*Five Cities in Which All Diphtheria Deaths in 1938 Were Stated to Be in Nonresidents*

Boston	Salt Lake City**
Hartford*	Toledo*
Richmond	

* All typhoid deaths in 1938 were stated to be in nonresidents.
** No typhoid deaths in 1938.

TABLE 14.—*Number of Cities with Various Diphtheria Death Rates*

	No. of Cities	40 and Over	20 and Over	10 and Over	5 and Over	Under 5	0.0
1890-1894.....	64	52	60	61	62	2	0
1895-1899.....	66	34	58	63	65	1	0
1900-1904.....	68	22	46	64	66	2	0
1905-1909.....	72	3	43	66	71	1	0
1910-1914.....	79	1	36	63	78	1	0
1915-1919.....	84	0	25	62	81	3	0
1920-1924.....	88	0	14	65	86	2	0
1925-1929.....	92	0	1	22	67	25	0
1930-1934.....	93	0	0	0	24	69	0
1935.....	93	0	0	2	17	76	19
1936.....	93	0	0	0	5	69	19
1937.....	93	0	0	0	3	70	20
1938.....	93	0	0	0	3	66	24

The Mountain and Pacific states (table 8) report seventy-four deaths in 1938, an increase over the fifty-nine deaths recorded in 1937. The rate has increased from 1.43 to 1.75, approximately the same as for 1936 (1.78). There are two cities with no death in 1938

(Long Beach, Tacoma). There has occurred no diphtheria death among residents of Tacoma in four years; none in Salt Lake City in three years. Spokane, after remaining on the honor list for two consecutive years, reports one death among residents in 1938. The nine recorded deaths in San Francisco are among residents. It is reported that, in Los Angeles, thirteen of the thirty-two deaths occurred among nonresidents. The figures are identical with those for the preceding year. Denver reports fourteen deaths among residents, no record being kept for nonresidents.

Of the entire ninety-three cities there remain three with a rate of 5.0 and over (table 14). The number

TABLE 15.—*Total Diphtheria Death Rates for Eighty-Eight Cities, 1923-1938* **

	Population	Diphtheria Deaths	Diphtheria Death Rate per 100,000 of Population
1923	31,060,848	4,078†	13.13
1924	31,722,841	3,439	10.84
1925	32,384,834	3,133	9.67
1926	33,046,827	3,106	9.40
1927	33,708,820	3,493	10.36
1928	34,370,813	3,176	9.24
1929	35,032,806	2,738	7.82
1930	35,694,802	1,827	5.12
1931	36,503,412	1,366	3.74
1932	37,084,712	1,191	3.21
1933	37,084,712	861	2.32
1934	36,777,112	821	2.23‡
1935	36,777,112	764	2.08‡
1936	37,575,105	561	1.50
1937	38,169,704	556	1.46#
1938	38,410,545	473	1.23##

* The five following cities are omitted from this summary because data for the full period are not available: Jacksonville, Miami, Oklahoma City, South Bend and Utica.

† Data from Fort Worth lacking.

‡ The rate for the ninety-three cities in 1935 is 2.09 (population 37,437,812, diphtheria deaths 782). The corresponding rate for 1934 was 2.26 and the average for 1930-1934 was 3.34. The rate for ninety-three cities in 1936 is 1.51, population 38,249,094, diphtheria deaths 577.

Rate for ninety-three cities in 1937 was 1.46 (total population 38,885,435, diphtheria deaths 568).

Rate for ninety-three cities in 1938 was 1.23 (total population 39,143,556, diphtheria deaths 483).

Special Note.—Deaths for 1936 have been corrected, as Yonkers originally reported eight deaths and later corrected report to one death.

of cities with no deaths from diphtheria has increased by four; that is, from twenty to twenty-four. A most significant gain has been made by the cities in the East North Central states (table 4).

TABLE 16.—*Total Diphtheria Death Rates per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Dimensions*

		Diphtheria Deaths		Diphtheria Death Rates			
	Population	1938	1937	1938	1937	1930-1934	1925-1929
New England	2,645,438	17	21	0.64	0.79	3.38	8.34
Middle Atlantic	13,469,996	64	95	0.48	0.71	2.50	9.97
South Atlantic	2,638,626	43	53	1.63	2.04	3.54	7.37*
East North Central	9,907,440	153	186	1.54	1.88	3.66	11.21†
East South Central	1,355,080	44	42	3.25	3.16	6.36	6.34
West North Central	2,785,688	31	35	1.11	1.26	3.22	7.82
West South Central	2,120,553	57	67	2.69	3.21	6.55	9.24‡
Mountain and Pacific	4,220,735	74	59	1.75	1.43	2.69	6.28

* Lacks data for 1925 for Jacksonville and Miami.

† Lacks data for South Bend.

‡ Lacks data for Oklahoma City for 1925 and 1926.

For the entire group of ninety-three cities the diphtheria death rate in 1938 was 1.23, compared with a rate of 1.46 for 1937 and 1.51 for 1936. The actual number of diphtheria deaths has decreased by eighty-five (from 568 to 483).

The remarks from the various public health administrators indicate that intensive programs are being carried on in many parts of the country. The family physician is teaming up more frequently with the health department and medical society and dispensing more preventive services in his own office. The evidence at hand indicates that the protection programs so extensively maintained throughout the country are resulting in a lower death rate from diphtheria.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE AND REPORTS.

HOWARD A. CARTER, Secretary.

MEDICAL DIATHERMY

Medical diathermy is the therapeutic use of heat generated in the body tissues by a high frequency current which has insufficient local intensity to produce temperatures high enough to destroy the tissues or impair their vitality. Such currents are applied locally by three methods: (1) conventional long wave diathermy, contact metal electrodes being used, (2) short wave diathermy with an electric field, air-spaced or insulated electrodes being used, and (3) short wave diathermy with an electromagnetic field method, a cable being used.

In conventional or long wave diathermy the frequency of oscillation is usually from one-half million to three million cycles a second. In short wave diathermy the frequency of oscillations may be from ten million to 100 million cycles a second.

PHYSIOLOGIC EFFECTS OF LOCAL MEDICAL DIATHERMY

The effects of electric current when applied to body tissues may be thermal, chemical or mechanical, depending on the physical characteristics of the current. The fundamental reason for using high frequency currents for heating is that the body heat may be raised without injury or electrical stimulation.

With regard to short wave diathermy, there has arisen considerable controversy as to whether it produces specific effects other than that of heat. In the light of present observations, the consensus seems to be that no definite physiologic effects other than those attributable to heat have been substantiated. The physiologic effects of heat have been considered by Pemberton [1] and by Gill [2] and will not be discussed here.

SHORT WAVE DIATHERMY VS. CONVENTIONAL DIATHERMY

The consensus seems to be that there is no great difference in the effects produced by short wave diathermy and conventional diathermy except that the former apparently produces deeper, more uniform heating and is more readily applied.

DOSAGE

The regulation of doses in medical diathermy is empirical. In short wave diathermy the only recognized method of measuring doses is the comfortable heat sensation of the patient's skin. The milliammeter on the high frequency apparatus does not measure the electrical energy passing through the patient. In high frequency apparatus the milliammeter indicates the amount of current passing through it but does not measure the electrical energy passing through the patient. The patient's tolerance is the most important guide for the final dose to be used. If it is suspected that the sensibility to heat may be deficient in the skin over which the electrodes are placed, it is advisable to

1. Pemberton, Ralph: Physiologic Effects of Heat, Handbook of Physical Therapy, 1939.

2. Gill, A. Bruce: Heat in Surgical and Orthopedic Conditions, Handbook of Physical Therapy, 1939.

test the skin with hot water in a test tube, using the operator's skin sensation as a control.

It is to be emphasized that in short wave diathermy there should be no clothing between the electrode and the skin. A burn received from a treatment by short wave diathermy when the clothes have not been removed might readily provoke a medicolegal situation. After the treatment it is important to inspect the skin of the part treated.

The regulation of dosage with short wave diathermy is an even more empirical procedure than with conventional diathermy. The milliammeter is connected to the oscillatory circuit of the apparatus and serves chiefly as an indicator that electrical energy is passing. It will also indicate that in a certain position of the controls, when the patient's circuit is tuned to the oscillator circuit, there is a maximum flow of energy in the treatment field.

CONTRAINDICATIONS

It is important to keep the contraindications for diathermy in mind. The local application of high frequency currents is contraindicated in the case of certain acute inflammatory processes, such as acute nondraining cellulitis and acute infectious arthritis, or any condition in which there is a tendency to hemorrhage, such as a gastric ulcer; over areas in which the appreciation of heat has been impaired or lost, as in the case of certain peripheral nerve injuries; through the abdomen, pelvis or lower part of the back during pregnancy; during menstruation or thirty-six hours before or after menstruation, and over areas where a malignant growth is suspected.

INDICATIONS

Contusions.—The early application of cold by compresses or ice bag will reduce ecchymosis, swelling, pain, tenderness and limitation of motion. After the first twenty-four hours, infra-red radiation and medical diathermy may be applied to increase activity of the circulation.

Muscle Strains.—These are treated like contusions with regard to the application of cold and heat. For muscle strains, diathermy must be applied for only a short time and at a low intensity for the first treatment, as it may cause an increase in the swelling.

Myositis Ossificans.—With muscle injuries there is always the possibility of the development of myositis ossificans, which tends to progress unless the affected area is properly treated. The treatment consists primarily in rest and increase of local circulation by various means, especially diathermy.

Sprains and Dislocations.—There are various degrees of sprains, and treatment varies in direct proportion to the damage done to the soft tissues. Immediate walking may be advised in cases of slight sprain of the ankle, while rest in bed may be indicated in cases of severe sprain.

A mild sprain of the ankle can be satisfactorily treated by strapping to prevent lateral motion but not plantar and dorsal flexion. The efficacy of this method depends on the efficiency of the strapping. It is thought that plantar and dorsal flexion have a direct effect in promoting return of circulation and prevention of adhesions.

In the treatment of some sprains and dislocations, fixation by a removable plaster splint and the daily application of heat and massage may be preferred. In sprains or dislocations, ligaments are torn and muscles, blood vessels, nerves, tendons and the synovial membranes of the joint are injured; there are hemorrhage from the torn vessels, swelling and muscle spasm. Inflammatory action is noted with heightened local metabolism and elevation of temperature. For immediate treatment, therefore, local applications of cold with rest, proper compression, bandaging and elevation are indicated. After the first twenty-four to forty-eight hours, there are local edema and decreased local metabolism. Then the treatment should consist in removal of the splint and bandage followed by the application of external heat or diathermy, and this is usually succeeded by massage and exercise to produce a free flow of blood through the part. One must not forget, however, that other methods of applying external heat are available, such as those described in other chapters of the Handbook of Physical Therapy concerning heat. Among other important measures following the heating of these parts is the stimulation of circulation by massage and exercise.

Bursitis.—The first attack of bursitis can usually be relieved by physical therapy in about two weeks. The part should be placed at rest. For acute bursitis, infra-red radiation from a luminous source is given for thirty minutes at least twice daily and short wave diathermy is applied for twenty minutes once daily. As the pain diminishes, careful massage and relaxed motion should be employed; later, active exercise is started. Acute subacromial, radiohumeral, olecranon and prepatellar bursitis are treated in this manner. In a few cases, diathermy may aggravate the pain. In these cases it may be necessary to put the patient to bed and apply continuous moist heat.

For chronic subacromial bursitis, conservative measures, such as rest, infra-red irradiation, short wave diathermy, massage and exercise should be tried before operation is considered. In some cases of chronic involvement with severe pain the shoulder should be immobilized in an airplane splint. In this form of bursitis, calcified deposits may form without any apparent cause, are often fragmented and may disappear spontaneously. It is believed that diathermy may aid in the absorption of such deposits. When conservative measures fail, operative removal of the bursa and its calcified deposit is advised.

Tenosynovitis.—Traumatic tenosynovitis most commonly affects the tendons of the wrist, the achilles tendon and the long head of the biceps. The treatment is to immobilize the joints whose motion causes pain in the tendons. The splint is removed and short wave diathermy is applied for twenty minutes once daily, followed by radiant heat once or twice daily for twenty minute periods. It may be advisable to use motion in a whirlpool bath to prevent adhesions.

Rheumatic, gouty and gonorrheal tenosynovitis are treated in the same manner as the traumatic form. Pyogenic tenosynovitis is a surgical problem and diathermy is not used in its treatment.

Chronic Arthritis.—This is not a disease of certain joints but rather a systemic illness, in which there may be disturbances of the circulation, general metabolism, gastrointestinal tract and nervous system. The syndrome of chronic arthritis includes the nerve, muscle and joint diseases called neuritis, myositis, fascitis and arthritis, according to the part affected. Local and general applications of heat have perhaps their most extensive varied usage in the treatment of chronic arthritis. In chronic arthritis the circulation in the more narrow vessels, especially at the periphery, is usually diminished. The involved areas may be cold and clammy, but they may also present rubor, dolor and color. In any event, local heat may prove of great value, as may systemic applications, because of the

alteration and improvement in the circulation brought about. Great care should be exercised in the application of heat in cases of hypertrophic arthritis, since heat may constitute a form of trauma which aggravates the conditions already present. When indicated, however, local application of heat should be made from two to four times a day in the patient's room to produce an adequate increase in circulation, and, if medical diathermy is used, it may be supplemented with the former treatment. When medical diathermy is used for chronic arthritis it should be used for a short period with low intensity for the first few doses, because sometimes it causes an aggravation of the local symptoms. Clinical benefit, however, has been observed so often from diathermy that one should always give it a trial.

Myositis and Myofascitis.—These conditions are inflammations of the muscles characterized by pain on motion, spasm and tenderness on pressure. When the inflammation involves the lumbar muscles, it is known as lumbago; the intercostal spaces, pleurodynia, and the neck muscles, torticollis. In the local treatment of acute forms, rest and the application of heat are recommended. This heat may be applied by hot compresses, continuous moist heat, infra-red radiation from a luminous source or medical diathermy.

Fibrositis.—This has been defined as a swelling and proliferation of the white fibrous tissue anywhere in the body in response to injury or very toxic infection, with a secondary effect of pressure on arterioles and nerve filaments. Many American clinicians have been loath to recognize fibrositis because its morphologic lesions are ill defined and its symptoms subjective. Those who do recognize it by its nodules in the muscles classify most forms of muscular rheumatism as fibrositis and treat the condition with deep massage. Heat, massage and exercise are used as adjuncts in the treatment, and diathermy may be used as one of the methods of giving heat.

Fractures.—The principles of fracture treatment are restoration of anatomic form, maintenance of alinement and fixation of the fracture during the period of union, and maintenance and development of function. (For a more complete discussion, see "Physical Therapy in the Treatment of Fractures," by Dr. Frank D. Dickson, included in the Handbook of Physical Therapy.) Heat, massage and mobilization are important physical therapy measures, the object of which is to increase the activity of the circulation, to prevent adhesions in muscles and joints, to prevent muscular atrophy and later to increase muscle strength. The heat, of which one method of production is medical diathermy, is used mainly as an adjunct to massage and exercise.

Genito-Urinary Conditions.—Medical diathermy is used by a few clinicians as one of the methods of applying heat for the treatment of epididymitis and prostatitis.

Pelvic Infections.—Some gynecologists use medical diathermy as one of the methods of applying heat in cases of pelvic infection, although most gynecologists believe that a low degree of heat usually suffices.

Respiratory Diseases.—The chest compress is used by some clinicians to apply heat in the treatment of bronchitis. If the patient is in the hospital, it is believed that medical diathermy is more effective and easier to apply. With bronchitis, this method relieves the pain and soreness in the chest, reduces the viscosity of the secretions and thus makes expectoration easier; it also relieves the coughing.

It has been observed that, in the management of pneumonia, medical diathermy does seem to be of definite benefit in reducing the severity of thoracic pain. This symptomatic relief is important. The main factors concerned in the production of anoxemia are the passage of blood through the unaerated portion of the lung and shallow breathing. The shallow breathing may be due to pleuritic pain restricting the respiratory excursions. The relief of this pain by diathermy increases the respiratory excursions and this may be the explanation for the decrease in cyanosis that is usually noticed. There is no evidence that medical diathermy has a specific action on the pneumonic process.

Gastrointestinal Diseases.—For such conditions as acute enteritis, spastic colitis and simple catarrhal jaundice, abdominal warmth is suggested as an aid in treatment. An electric heating pad or a hot water bag kept on the abdomen for hours at a time is useful therapeutically. Infra-red irradiation is a convenient way of applying heat; diathermy, if mild and properly applied, is also of benefit.

Inflammation of the Peripheral Nerves.—With the various forms of neuritis, radiculitis and neuralgia, applications of heat may allay the inflammation and the pain. For deep penetration of heat into the tissues, medical diathermy may be used as a method of applying heat as an adjunct in general treatment. In the case of acute neuritis or acute radiculitis, it is believed that the first two treatments should be given at half the patient's tolerance for about ten minutes to see whether there is any aggravation of the symptoms.

Acute and Chronic Sinusitis.—Infra-red irradiation and medical diathermy are useful adjuncts to other treatment after adequate drainage has been established. Medical diathermy is of value as an aid in the relief of pain; the frontal and maxillary sinuses are the ones most suitable for treatment.

Eye Diseases.—The indications for medical diathermy are by no means well established. It is believed that this treatment may be used to relieve pain from chronic keratitis, neuralgia, herpes zoster and iritis.

Suppurative Processes.—Short wave diathermy has been advocated in the treatment of suppurative lesions with external drainage and doubtless will be of aid in this treatment. However, sufficient comparative study is not available to determine whether short wave diathermy is more effective than the simpler forms of heating.

SUMMARY AND CONCLUSIONS

While there appears to be no great difference between the effects produced by conventional and short wave diathermy, short wave diathermy seems to produce deeper, more uniform heating and is more readily applied, although the control of dosage is more difficult than with conventional diathermy. Nevertheless, burns are less likely to be produced in short wave diathermy.

So far as competent investigators have been able to determine, there is no demonstrable selective thermal action in the living body. The Council has accepted certain short wave apparatus, which are listed in a booklet "Apparatus Accepted by the Council on Physical Therapy of the American Medical Association." Physicians are urged to read this booklet before purchasing an apparatus. The Council requires certain definite tests for deep heating before accepting an apparatus, and its survey of the machine gives the results of these tests as well as the efficiency and accepted technics for use of the machine.

Clinical observations, however, have not indicated that the penetration of heat induced by short wave diathermy presents advantages not obtained by con-

ventional diathermy. In the light of present observations, no specific physiologic effects other than those attributable to heating have been substantiated.

The consensus (particularly of those who have performed careful experiments) would seem to be that the effect of various wavelengths between 3 and 30 meters is approximately the same. There are apparently no specific bactericidal effects other than those attributable to heat, either in vitro or in vivo. There is no reason to believe that treatments of five minutes or less have any marked action other than a psychic one.

The chief advantages of short wave diathermy over conventional long wave diathermy are its ease of application and the lessened danger of burns.

LUXOR PROFESSIONAL MODEL ALPINE LAMP ACCEPTABLE

Manufacturer: Hanovia Chemical and Manufacturing Company, Chestnut Street and N. J. R. R. Avenue, Newark, N. J.

The Luxor Professional Model Alpine Lamp contains a high pressure, low voltage quartz mercury arc burner and is designed for therapeutic use in hospitals or offices. It is available for operation on alternating current (Model S) and direct current (Model E). The burner is placed inside a processed aluminum reflector so designed as to keep the hood temperature cool. Hinged doors on the hood intercept light and control, within limits, the size of the area irradiated. By rotating the hood, the angle of projection of light may be altered. A steel tape measure is attached to the side of the hood to measure distance from burner to patient.

The hood is mounted on a four-pod base resting on four rubber-tired ball-bearing casters and is adjustable within limits of 53 inches and 68 inches from the floor. When fully telescoped, the overall height of the lamp is 57 inches. The shipping weight of the entire unit is approximately 130 pounds. It is finished in ivory-colored enamel.

Luxor Professional Model Alpine Lamp.

Burners for both alternating and direct current are similar to an extent. Each comprises a transparent fused quartz tubular vessel provided with metal lead-ins for the electric current which are sealed vacuum tight directly to the quartz. The alternating current burner has solid, self-heating electrodes. The burner for the direct current has a mercury pool cathode and a solid incandescent anode. In both models the radiant energy is generated by means of an electric discharge through mercury vapor. The spectrum of radiant energy is that of mercury vapor and the spectral energy distribution of both lamps is that of the high pressure mercury arc in quartz. The load wattage for Model S (alternating current) is 450, for Model E (direct current) is 310. Electric current is supplied to the burner in Model S from a transformer through a reactor; in Model E through a rheostat.

The intensity of the ultraviolet radiant energy at 30 inches from the burner for wavelength 3,130 angstroms and shorter is 1,200 microwatts per square centimeter. This energy will produce a first degree erythema (mild reddening) on the average person after an exposure of one minute. The alternating and direct current lamps are equal in intensity and erythema production.

Reports from clinics indicate that intensities lower than those produced by this lamp are effective in the protection and cure of rickets and infantile tetany in children.

The unit was tried out in a clinic acceptable to the Council and reported to give satisfactory clinical service. The minimal erythema time at 30 inches was three quarters of a minute. The burner lighted instantaneously and the warm-up period was short as compared to older types of ultraviolet units.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Luxor Professional Model Alpine Lamp for inclusion in its list of accepted devices.

HIGH TENSION SHORT WAVE APPARATUS, MODEL RF-1, ACCEPTABLE

Manufacturer: High Tension Electric Corporation, 118 West Twenty-Second Street, New York.

The High Tension Model RF-1 Short Wave Apparatus is recommended for medical and surgical diathermy. It is a portable model, equipped with pad and cuff electrodes and electrosurgical accessories. The unit proper is 19 inches long by 12¼ inches high by 11½ inches deep. The total weight of the unit and subcabinet is 92½ pounds and the weight of the unit alone, without subcabinet, is 41½ pounds.

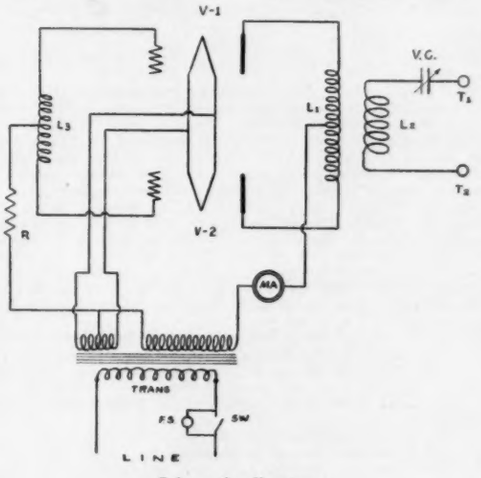
High Tension Short Wave Apparatus, Model RF-1.

Two self-rectifying tubes are utilized in a push-pull oscillator circuit of modified design. The wavelength is between 15 and 15.6 meters. The patient's circuit is inductively coupled to the oscillating circuit. Current to the patient is regulated through a tuning condenser.

The maximum power required to operate the RF-1 Model is approximately 750 watts. The output power is about 275 watts as determined by the lamp load method.

The final transformer temperature of the unit after operation at full load for two hours was 71 C. The final temperature at the top of the cabinet over the transformer was 57.5 C. The final temperature at the bottom of the cabinet was 49 C. These temperatures are within the limits of safety.

Evidence was submitted by the firm to substantiate tissue heating claims made for the Model RF-1 Short Wave Diathermy Apparatus as applied to the living human thigh. Three male subjects were used in these tests. Temperatures before and after the twenty minute applications were taken by means of a hypodermic thermocouple calibrated against a thermometer standardized by the National Bureau of Standards. The skin surface temperatures and the muscle temperatures were observed. The electrodes were 21½ inches long and 2¼ inches wide. The average distance from center to center of the cuffs was 8.6 inches.



Schematic diagram.

The cuffs were operated from the skin by means of felt pads and towels to 1 1/10 inches. The average thigh circumference was 18.7 inches. The average room temperature was 70 F. and the humidity was 51 per cent.

Averages of Six Observations, Cuff Technic

Deep Muscle		Rectal	
Initial	Final	Initial	Final
97.8	106.1	99.1	99.3

Using the cuff technic only, the Council on Physical Therapy voted to include the High Tension Short Wave Apparatus, Model RF-1, in its list of accepted devices.

THE CASE OF BRINKLEY VS. FISHBEIN

PROCEEDINGS OF A LIBEL SUIT BASED ON AN ARTICLE PUBLISHED IN *HYGEIA*

(Continued from page 1968)

TESTIMONY OF DR. MORRIS FISHBEIN

Dr. Morris Fishbein stated his qualifications as a physician and as a writer. He then described the work of the American Medical Association, including the work of the various councils, bureaus and departments. He then described fully THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and its distribution; next, how a physician becomes a member of the American Medical Association, and the nature of membership; then the foundation of *Hygeia,* its purposes, circulation, income and loss.

The evidence then proceeded:

Q.—Doctor, referring to the article upon which this suit is based, you were the author of that article, weren't you? *A.*—Yes, sir.

Q.—Will you tell us from what source or sources you procured the information and material for that information? *A.*—Most of the material was secured from the files of the American Medical Association, which are maintained constantly, which I have described, by the Bureau of Investigation; the Bureau of Investigation, which was established in 1905, maintains permanent files containing the records of all persons, devices, drugs and similar promotions which come under its attention. Most of the material regarding the plaintiff was on file in the records of the Bureau of Investigation; there were also on file in that record the complete reports having to do with the work of the plaintiff issued by him from time to time at his various addresses; there were also on file the records of various hearings that had been held in various states relative to revocation of license.

Mr. Morriss Jr.:—We object to the witness's statement of these various matters as his conclusion and opinion of what they might be.

THE COURT:—Isn't it the rule of evidence that if the party writing the article honestly believes it to be so, why, it may be tendered to mitigate damages?

Mr. Morriss Jr.:—But he can't tell what is in some instrument or letter that he doesn't produce.

THE COURT:—I shouldn't think so, not as proof of the truth of those facts, but he can testify as to the sources from which he got the information he put in the article.

Mr. Morriss Jr.:—He can't tell what he got, and he has now been stating that, and we move to exclude it. We agree with the Court that he is entitled to state where he got it from, but not the contents of the written matter.

THE COURT:—I didn't understand that he had stated the contents; he said he got it from certain records of hearings where the matter was regarding the revocation of license.

Mr. Morriss Jr.:—That is stating the import of the information.

THE COURT:—I think this is quibbling; the plaintiff was interrogated in regard to that. I will overrule the objection.

Mr. Morriss Jr.:—Note our exception. It calls for a conclusion and opinion of the witness.

A.—I had also available letters sent to headquarters office by persons relative to the plaintiff; I had also records of conversations and reports with persons relative to the plaintiff.

Q.—Now, Doctor, it is alleged in the complaint that this article was printed in the *Hygeia* of February 1938, and was that an original article for the February number of *Hygeia?* *A.*—The article appeared in two parts, the first part in January and the second part in February.

Q.—Now, we notice that the article in the January issue is headed, as counsel has shown, "Modern Medical Charlatans"; is the article declared upon and which is published in *Hygeia* for the following month, February 1938, a continuation of that series of articles on that subject? *A.*—It is.

Q.—Doctor, do you know John R. Brinkley in person? *A.*—No, sir.

Q.—Have you ever met Dr. John R. Brinkley before this trial? *A.*—No, sir.

Q.—Of course, you had never had any dealings with him? *A.*—No, sir.

Q.—What was your feeling toward John R. Brinkley before writing the article? *A.*—It is a part of my duty as editor of THE JOURNAL and of *Hygeia* that—

Mr. Morriss Sr.:—Just a moment, may it please the Court, that is argumentative.

THE COURT:—It is not responsive to the question.

Mr. Morriss Sr.:—Yes, but it is an attempted argument.

THE COURT:—Well, I sustain it. You will have to start over and answer the question. He asked you what was your feeling toward him. You are entitled to explain that, if you want to.

A.—My feelings would be, from a scientific point of view, quite negative; in other words, for a period of approximately about twenty-five years, week after week, month after month, we have published articles describing various patent medicines, nostrums, charlatans and promotions in the field of health, and in the course of that work there came to our attention the performances of the plaintiff, and in accordance with the usual carrying out of the work it becomes necessary then to discuss the performances of the plaintiff along with others in the same field.

Q.—Well, did you have any personal animosity toward Dr. Brinkley? *A.*—No, sir.

Q.—Well, now, Doctor, there has been something said during this trial about eclectic physicians and what is an eclectic physician? *A.*—There have been from time to time in the practice of medicine various fields of medical practice devoted to special—

Mr. Morriss Sr.:—There may be some limitation, but the answer as it starts out is not responsive, it is just a continuation of the answer.

THE COURT:—Everybody can't speak in absolute terms of definition, and if he wants to tell us in his own way what eclectic is, he can do it.

A.—I might point out there was one school of eclectic physicians that existed 1,500 years ago, and that school of eclectics is, obviously, obsolete; more recently a school of eclectic was established about the time of the Revolutionary War of the United States, and it reached its height about 1850, and from that time on eclectic medicine began to decline, representing eventually a certain group of doctors that believed primarily in plant remedies and believing that for each disease there was a plant remedy; certain schools remain that teach that belief.

Q.—And one of those schools was the Kansas City Eclectic Medical College, is that right? *A.*—Yes, sir.

. . . . . .

Q.—In this article there is some mention made by you of the plaintiff's activities in performing operations by the transplantation or implantation of goat glands in a human being, and from what sources did you obtain that information? *A.*—Most of the information from the pamphlets issued by the plaintiff himself, some of the information through personal visits to the state of Kansas and occasional conversations with persons who had been directly familiar with such transplants.

Q.—Now, there is also some mention made in the article of the plaintiff conducting the so-called medical question books, and from what source or sources did you receive that information? *A.*—I heard the plaintiff repeatedly as he made his radio broadcasts, and I had also opportunity to see transcripts of his broadcasts, and I was familiar also with the record of the appearances before the Federal Radio Commission.

Q.—That was in connection with the revoking of the plaintiff's radio broadcasting license? *A.*—That was in connection with the Federal Radio Commission's decision not to renew the license.

Q.—Now, there is a statement in the article declared upon in regard to the plaintiff's license to practice medicine in Kansas being revoked. *A.*—Yes, sir.

Q.—From what source did you receive that information? *A.*—The records of the Bureau of Investigation contain a complete statement relative to the revocation of the license in Kansas; I obtained information also regarding that from Dr. C. C. Nesselrode, who investigated the work of the plaintiff at first hand and also from Dr. J. F. Hassig, who is a member of the Kansas Board.

Q.—Who is Dr. Nesselrode? *A.*—Dr. Nesselrode is a physician in Kansas City, Kansas, who has himself for the Kansas Board witnessed an operation by the plaintiff in Milford, Kansas.

Mr. Morriss Sr.:—That is obviously the merest, rankest hearsay, and we move to exclude the statement.

THE COURT:—It may be that you know something more about it than I do, but it is my understanding that in these kind of cases the law is that a party accused of libel is entitled to state the sources where he got the information and what it was. I don't admit the statements of third persons for the purpose of proving the statements, but I admit it for showing that he received it from third persons, and if he wants to testify that he believed them and acted on them, I think it is proper evidence.

Mr. Morriss Sr.:—He testified he received it from Dr. so and so, who witnessed—

THE COURT:—It may be that he ought to say that Dr. Nesselrode told him.

Mr. Morriss Sr.:—Then, we have no objection to that.

A.—I will revise the statement that I received the statement from Dr. Nesselrode, who said he had witnessed the operation.

Q.—You believed that statement, did you, Doctor? *A.*—Yes, sir.

Q.—Now, I notice that in the article there is the statement in regard to the compound prostate operation of the plaintiff, and I will ask you from what source or sources you received that information? *A.*—I have read the records in which the Kansas State Board of Medical Registration received the report from Dr. Nesselrode on which basis that Kansas State Medical Board revoked the license, and the report of Dr. Nesselrode describing the four phase compound operation as given to Dr. Nesselrode, according to his statement, at the time when he watched the plaintiff perform the procedure on two patients.

Q.—Now, it is said here, as part of the article that I am referring to, that Dr. Brinkley has a high pressure man in his front office to make sure that those who come to the hospital will have the money to pay in advance for the work, and from what source or sources did you receive that information? *A.*—In the first place from a patient who, having submitted himself to a procedure by the plaintiff, later visited the Mayo Clinic in Rochester, Minnesota, and made a direct statement of his financial relationship at the time when he visited the plaintiff; second, from the repeated statements of the plaintiff in broadcasts as to the financial ability of those requested to come to his hospital.

Q.—Now, it says here, Doctor, "they are able to develop mortgages, loans, and conversion of securities in order to permit the patient to pay on the nail for what he is going to get," and from what source or sources did you obtain that? *A.*—From the statements of the patient already mentioned, and also from the statement of the business manager, I believe, who was here yesterday, for the present time; prior to that time from the statement made by this patient and the statements made on the radio as to the financial ability of those coming to the hospital.

Q.—And you believed those statements, did you, Doctor? *A.*—I believed that the plaintiff meant what he said when he said that he wanted them to be financially able.

Q.—Now, it says "most of the business, however, seems to come by way of the mail, and it is time for the Post Office Department to do something in regard to the use of the United States mails by John R. Brinkley in his defrauding of the public," and from what source or sources did you receive that information? *A.*—From listening to the broadcasts of the plaintiff on many occasions, and on one occasion in which the plaintiff said in my own hearing to the people to send him merely a bill with their name on a sheet of paper mentioning the broadcast, but not to describe the symptoms, merely send the name on a piece of paper with a bill; in fact, if I can remember the exact words, he didn't have time to go into the symptoms and that he would send a bottle of medicine that would be of help to them.

Q.—Now, it says here, Doctor, in your article "another of the Brinkley schemes is to sell to the patient who comes to his lair five ampules of his remedy for postoperative treatment at a cost of $100. These the patient is supposed to take home in order that the contents may be injected into him by his selected doctor. When an analysis of the selected ampules was made, it revealed that they contained a solution of approximately 1 drop of indigo to 100,000 parts of water—about what you would get by throwing a bottle of bluing into Lake Michigan," from what source or sources did you receive that information? *A.*—Letters, as

I have said, come in many thousands to the headquarters of the Association from physicians and from the public inquiring about all medical matters in the public eye, and in the course of our work there came letters from several physicians indicating patients had returned to their home town bringing along—

Mr. Morriss Jr.:—We object to the statement of the letters as not being the best evidence.

THE COURT:—Overruled.

Mr. Morriss Jr.:—Note our exception. It is hearsay.

A.—Letters had come from physicians indicating their patients had returned home bringing along certain ampules, these patients requesting the doctor to inject the material into the patient as a part of the post-operative treatment; one physician stated definitely that his patient had said to him that he had paid $100 for this material. These letters were sent to the Division of Drugs, Foods and Physical Therapy where Dr. Leech, as a previous witness has described, is director, and Dr. Leech requested the physicians to send the ampules, which have been produced in court, and these ampules were turned over by Dr. Leech to Dr. Schoeffel, who then made, as he has described, a series of tests to determine the content of the ampules; then, to describe the matter in such form that any one might understand the relative value of the contents of this ampule the description was made as reported in the statement.

Q.—Doctor, how did you conclude that this solution, which has been analyzed in the Chemical Laboratory and known as 1020, is about what you would get by throwing a bottle of bluing into Lake Michigan, as you stated in this statement? *A.*—The report was made by Dr. Schoeffel to Dr. Leech, who is the director of the laboratory and also a chemist, and Dr. Leech conferred with the director of the Bureau of Investigation, and the article published, as a majority of contributions are, many of our articles are, several of the authorities in the headquarters office contributing; and Dr. Schoeffel has shown that the amount of material in the ampule of a solid character was so infinitesimal as hardly to have any appreciable effect. Now, I didn't personally throw a bottle of indigo into Lake Michigan, but the analogy, I believe, is clear.

Q.—Now, Doctor, what is meant by the medical term "isotonic?" *A.*—An isotonic solution is a solution of essentially the same concentration in solid terms as the human blood, and hypertonic is one of greater concentration of solid materials than is the human blood, and hypotonic is one of lesser. If there is any further question, it is customary to inject isotonic solutions into the blood in order to avoid serious reactions. Hypertonics will produce a reaction in the blood, as will also hypotonics.

Q.—What result will hypotonic produce as compared with hypertonic? *A.*—It is associated with an inflammatory reaction of the blood vessel wall.

Q.—Do I understand you to mean that a solution that is injected intravenously should be isotonic? *A.*—Unless for some specific purpose the physician wishes to produce an inflammatory reaction, as he might, for example, in obliterating a blood vessel.

Q.—Now, it is said here in this article, Doctor, "the evidence assembled indicates that at various times Brinkley has made as much as $55,000 a week from his various quackeries. He has been the possessor of three fine yachts," from what source or sources did you obtain that information, Doctor? *A.*—It evidently was brought out in the hearing before the Federal Radio Commission, and at that time there was a failure to renew the license, and there was something with reference to the annual income of the plaintiff; the question of yachts, and so forth, that is a matter of general knowledge, and it has been reported from time to time by various reporters and written up and described by them.

Q.—It says in this article, "he travels abroad and returns to this country in the finest suites on the finest boats, accompanied by his family and the little boy's tutor. On the vessel going and coming neither he nor Mrs. Brinkley engage in conversation with the passengers," and from what source or sources did you obtain that information? *A.*—From two sources: in the biography the statement is made definitely that in a previous visit abroad the plaintiff was shunned.

Q.—Is that the trip to China that was referred to here this morning? *A.*—That was here this morning, and the second source was the personal observation when I returned myself from abroad in August 1937.

Q.—You were on the same boat as Dr. Brinkley? *A.*—I was.

Q.—And that was on the *Normandie* was it? *A.*—Yes, sir, it was.

Q.—And that was about along in August 1937? *A.*—Yes, sir, it was.

Q.—Now, Doctor, in preparing this article for publication in the magazine *Hygeia*, did any one assist you? *A.*—The material was supplied to me by the Bureau of Investigation, by the Division of Drugs, Foods and Physical Therapy, by various divisions of our library department, where material is accumulated, the records having to do with medical licensure and the Council on Medical Education and Hospitals; the article once written, as all articles are, was then sent to an assistant editor or manuscript editor who reread and in spots re-edited the article; then the article went to the proof room where it was read in proof and returned, then, the article went to three associate editors, each of whom also read the article and made various suggestions, and the final article represents, therefore, an item written on my own responsibility, but, to that extent, with the assistance of others in the office.

Q.—And by article, you mean, Doctor, this entire series of articles in both the January and the February 1938 issues of *Hygeia*, do you? *A.*—Yes, sir.

Q.—And, of course, that series of articles, Doctor, refers to various people other than Dr. Brinkley, isn't that right? *A.*—Yes, sir.

Q.—What I mean by that, Dr. Brinkley is just one subject of a series of articles on a series of subjects; that is, he is one person? *A.*—Yes, sir.

Q.—Now, Doctor, it said in the article here at the beginning, "Without anything resembling a real medical education, with licenses purchased and secured through extraordinary manipulations of political appointees, and with consummate gall beyond anything ever revealed by any other charlatan, Brinkley has achieved an enormous success financially," and from what source or sources did you obtain that information for the article? *A.*—The sentence in question refers to several points. First, the point "without anything resembling a real medical education," an accomplished medical education as of the period 1910 or 1911 or 1912 included a year or two of college education, four years of medical education in a recognized medical school, what Mr. Petermeyer described, I believe, as a class A school. Next, the internship in a hospital recognized as suitable for giving an intern a reasonable amount of education and experience; the plaintiff had no such medical education, according to any records that are anywhere available. As to the enormous financial success, the records of the hearing before the Federal Radio Commission indicated the income of the plaintiff at that time, and he, himself, has testified as to his income during 1937—

Mr. Morriss Sr.:—Evidently that, now, must be an argument, because he didn't have that testimony before him when he wrote the article.

THE COURT:—Yes, sir.

A.—According to the admitted ownership of three yachts and a hospital and the living habits of the plaintiff, it was apparent that his financial competence was considerable, at least as compared with that of the average physician, so that he might be said in comparison with the average physician to have made an enormous financial success.

Q.—What do you consider the average amount earned by a physician, as you have stated here?

Mr. Morriss Jr.:—That would be incompetent and a conclusion and an opinion.

THE COURT:—Overruled

Mr. Morriss Jr.:—Note our exception.

A.—There have been reports as to the average income of a physician in the United States, at least three such reports, one made by the United States Government, one made by a committee on the costs of medical care and one made by the Bureau of Medical Economics by the American Medical Association, and all three reports agree that the approximate average income of a specialist in the United States is between $6,500 and $7,000 per year, and the average income of a general practitioner between $3,000 and $3,500 per year.

Q.—Now, while we are on the subject of specialists, what is a specialist in medicine? *A.*—A specialist in medicine is a physician who limits his practice exclusively to a single system of the body or to a single form of medical procedure.

Q.—What qualifications does a specialist ordinarily have? *A.*—A specialist usually has taken special studies in recognized clinics or institutions having to do with the special branch of medicine which he pursues; he is usually a member of recognized scientific societies which are voluntary organizations of the men devoting their attention to such work; he may be the possessor of the certificate of an examining board in the specialty, because there are examining boards which examine men who claim special competency, and they certify to the fact that these men are qualified as specialists.

Q.—How would I determine whether or not a doctor is a specialist? *A.*—If you were to consult the directory of the American Medical Association you would find the schools of graduation, the membership in various special medical societies and also a statement as to whether or not he possessed the certificate of the examining board in his specialty.

Q.—What are some of these specialists' societies that you have referred to, name them, please. *A.*—There are approximately 200 such specialist societies. Concerning the specialties which the plaintiff states to be his specialty, there are the American Urological Association and the American Association of Genito-Urinary Surgeons.

Q.—What is the American Urological Association? *A.*—The American Urological Association is a voluntary organization of some hundreds of specialists who specialize in diseases of the kidneys, bladder, prostate and in various genital urinary diseases.

Q.—And what is the other society that you named, the American Association of Genito-Urinary Surgeons? *A.*—That is an organization consisting of men who specialize in surgical operations on the genital urinary tract.

Q.—Now, Doctor, will you tell us, if you know, whether or not men, that is physicians who specialize in these particular branches of medicine, are ordinarily members of such societies?

Mr. Morriss Jr.:—That is incompetent, irrelevant and immaterial to establish any issue in the case, and we object to it for those reasons, and it would be hearsay, and as to this plaintiff there is not the proper criterion.

THE COURT:—Overruled.

Mr. Morriss Jr.:—Note our exception.

A.—I would say that men recognized in the United States by their colleagues as competent in the field of urology and in the field of genital urinary surgery are usually members of these organizations.

Q.—Well, assume, Doctor, that the medical man holds himself out as being a specialist or a great urologist, would he ordinarily be a member of one or more of these societies that you mentioned?

Mr. Morriss Jr.:—We object to that as going over into a field of speculation, and for all of the other reasons.

THE COURT:—Overruled.

Mr. Morriss Jr.:—Note our exception.

A.—I would say that a man who has achieved prominence in the field of urology and in the field of genital urinary surgery is, in practically every instance, a member of one or the other, or both of these organizations.

Q.—All right, Doctor, now, this medical directory that you have mentioned as being printed and published by the American Medical Association, does that directory show by sign or symbol or in some manner the societies to which the medical men listed ordinarily belong? *A.*—It does.

Q.—So that a specialist or a man who holds himself out as a great urologist or a specialist, whose name is listed in that directory, if he belonged to either one of these societies it would be shown in that directory, wouldn't it? *A.*—It would.

Q.—So, in that manner you could obtain information as to any physician or surgeon as to the societies he belongs to? *A.*—I could.

Q.—By referring to the medical directory? *A.*—I could.

Q.—Now, Doctor, what proportion of the material used in compiling this article was received by you from the Bureau of Investigation, approximately what portion? *A.*—I would say approximately 70 to 75 per cent, three fourths of it.

Q.—Now, that bureau or department deals directly, doesn't it, with inquiries from people that write in regarding physicians? *A.*—Yes, sir.

Q.—That is, among other things, physicians? *A.*—Yes, sir.

Q.—And does the bureau keep a separate file for each of these physicians from whom—that is, of whom they have received inquiries? *A.*—It does.

Q.—Have you had a file on John R. Brinkley in that department for some time? *A.*—We have.

Q.—And is that department or bureau under your jurisdiction as editor of THE JOURNAL and as editor of *Hygeia*? *A.*—Not directly.

Q.—Well, is it connected in any way with the editorial department of these two magazines? *A.*—Yes, sir.

Q.—And in what way is it connected?

The witness then described the work of the Bureau of Investigation. The evidence proceeded:

Q.—Well, Doctor, before compiling this article, you didn't go out and investigate—

Mr. Morriss Sr.:—Don't lead the witness.

Q.—I will ask you did you go out and investigate John R. Brinkley to obtain this material for this article? *A.*—I had at various times been in the state of Kansas, I had at various times been in contact with investigations of the plaintiff in Kansas, and to that extent my knowledge was personal.

Q.—But what I mean is, most of this information came to the Bureau voluntarily? *A.*—By far most of this material came to the Bureau voluntarily from people who were inquiring and who sent along the material on which they based their inquiry.

Q.—Now, before compiling the—that is, when assembling that information and before compiling this statement did you or did you not believe the facts that you incorporated in this statement to be true? *A.*—I believed them to be true and I do believe them to be true.

Q.—Did you or did you not believe at that time the facts that are incorporated in this statement, believe it was a fair and impartial report of the information you had available at that time? *A.*—I do.

Q.—And by that you mean in your official capacity as editor of the *Hygeia* magazine? *A.*—I write always in my official capacity.

Q.—Doctor, we have offered and there has been received in evidence various and sundry exhibits, and I believe you looked at them at the table and are familiar with them? *A.*—Yes, sir.

Q.—Are those exhibits, that is, those pamphlets introduced in evidence here today, exhibits 9 to 38, do they contain the information or some of the information that you incorporated in this alleged libelous statement? *A.*—Yes, sir.

Q.—And did you base the statements that you made, either in whole or in part, upon the information that is contained in those pamphlets and other documents introduced in evidence here today? *A.*—Yes, all information which is contained in the article which I didn't personally see or take part in is based on documents which were available at the time the article was written.

Q.—Now, tell us what is meant by the word "quack"? *A.*—A quack is a person who makes extravagant and blatant claims.

Mr. Morriss Jr.:—That is what he means by it, but that is a matter for the Court to charge the jury as to what is meant by a quack, and it is a question of law.

THE COURT:—There are a great many definitions of "quack," and inasmuch as this man's motive is under question here, he is being sued for an amount for malicious libel, I think he is entitled to say what he meant by saying that.

Mr. Morriss Jr.:—The test is not what he meant.

THE COURT:—No, sir, but the test is what the average person in reading the article thinks; and I will so instruct the jury.

Mr. Morriss Jr.:—Note our exception.

A.—It is my own conception of a quack that a quack is a person who makes extravagant or blatant claims as to his ability in the field of medical science and in taking care of the sick.

Q.—Is that all? *A.*—That is the common, accepted definition, according to my knowledge of a quack.

Q.—Now, tell us what your definition of a "charlatan" is. *A.*—My knowledge of the word "charlatan" would take it to be in the vast majority of instances synonymous with the word "quack," and it means exactly the same thing.

Mr. Morriss Jr.:—The same objection.

THE COURT:—Yes, sir.

The witness described his interpretation of the term "recognized medical school" and the manner in which the American Medical Association investigates and lists hospitals.

The evidence proceeded:

Q.—How many lists of hospitals are published? *A.*—Three in the United States; one by the American Hospital Association, one by the American College of Surgeons and one by the American Medical Association.

Q.—By "lists of hospitals" what do you mean—describe it? *A.*—Hospital lists include what the American College of Surgeons calls acceptable hospitals; and the American Medical Association lists include registered hospitals and hospitals suitable for the training of an intern, and the American Hospital Association hospital list includes those holding membership in the American Hospital Association.

Q.—Do you know if the Brinkley hospitals are on the hospital lists that you refer to? *A.*—The Brinkley hospitals aren't on any of the lists.

Q.—Do you know if they have ever been on that list? *A.*—To my knowledge they have never been on any of the lists.

The jury was then excused from the court room, and the Court discussed with the attorneys the question of the admissibility of evidence as to the Brinkley marriage and divorce.

March 24, 1939

Dr. Fishbein resumed the stand, and there was offered in evidence a deposition by Dr. Nesselrode, having to do with his witnessing an operation performed by Brinkley in Kansas. Dr. Fishbein stated the extent to which he remembered the statements made by Dr. Nesselrode and also the deposition.

The evidence then proceeded:

Q.—Now, Doctor, you heard the testimony yesterday of the chemist here in regard to his analysis of form 1020? *A.*—I did, yes, sir.

Q.—And were you previously familiar with that analysis, doctor? *A.*—I was.

Q.—And for how long a time have you been familiar with that? With that analysis made by this chemist? *A.*—Since the time when it was completed.

Q.—Well, did you read his analysis or consider it? *A.*—I did.

Mr. Morriss Jr.:—We object to that, and we ask that all of the testimony be stricken because it appears from something in writing, and we object to it as not being the best evidence.

THE COURT:—He simply asked him if he read it. The chemist testified yesterday to his analysis and the fact that it was given to Dr. Fishbein.

Mr. Morriss Jr.:—But we are now getting at it, sir, and the doctor is attempting to testify what information he had before him and that was by a report in writing.

THE COURT:—I will overrule that portion of it. I think it is too technical.

Mr. Morriss Jr.:—Note our exception.

Q.—Now, Doctor, will you tell us in plain words so that we can all understand it what ingredients of one of these ampules or the ampules, the contents of which were analyzed by the chemist, just tell us in plain words what they were.

Mr. Morriss Jr.:—He couldn't do that. At most he can say what the other man told him and inasmuch as the report is in writing, and it is the best evidence—

THE COURT:—The chemist sat up here and told us what he found in the ampule and the doctor heard him do it, and any doctor could be asked to state in plain words what it was, if he knew.

Mr. Morriss Sr.:—If he was asked if he knew.

THE COURT:—You heard the chemist say what was in it and Dr. Fishbein heard him say it, and he could ask him that way, assuming that the ampule had in it what Dr. Schoeffel said in plain words, what it is. The testimony of Dr. Schoeffel was so highly technical it was difficult for the Court or the jury to get it.

Mr. Morriss Sr.:—But the witness's testimony must stand for itself and it must not be explained by anybody else, that is the usual rule.

THE COURT:—Whenever a witness gives evidence of a highly technical nature other witnesses can tell what it is in plain words so the jury can understand it. I will overrule the objection.

Mr. Morriss Sr.:—Note our exception.

A.—The analysis indicated that the contents of the ampule, which was the little glass bottle, was essentially 20 cc. of fluid, and 1,000 cc. makes a liter, and a liter is about a quart, and it contained approximately 20 cc., which is, as you can see, one fiftieth, or less, of a quart. This was essentially of the character of distilled water, except for an infinitesimal, a very tiny amount of coloring matter, very small indeed, in fact, so small it was necessary to have the services of a microchemist, which is a chemist that deals in very small materials, of which Dr. Schoeffel is one of ten, to make an analysis of small materials that were said to be in the solution, and he also found traces, as shown by the use of spectroscopic technic which is a technic in which one burns a certain amount of solid matter and causes the light to pass through a prism and then it distributes a colored scale on a chart, and on that technic he discovered a very small amount of halogen, and this was chlorine, about the same as common table salt, which is a contamination of the dye substances in the indigo field; and inasmuch as it was indicated that the ampule was said to contain a very minute amount of hydrochloric acid a search was made for that substance, but the indication of the presence of that substance was so minute that the explanation was offered that the walls of the glass had absorbed, perhaps, most of that substance, so that what the patient got exactly was a solution of the distilled water with an infinitesimal amount of dye substance and halogen or chlorine substance. Is that clear?

Q.—Yes, sir. Doctor, there have been many questions asked here the information to cover which has been taken from a book entitled "The Life of a Man," and I think it is by Clement Wood; in other words, a biography of John R. Brinkley, and I will ask you if before preparing this article you read the book "The Life of a Man"? *A.*—I read a copy of the book which was sent to me inscribed by the author as a presentation.

Q.—Now, Doctor, will you tell us what the common custom and practice among physicians in the United States is with regard to advertising, and I will say advertising in the field of medicine? *A.*—It is the common custom of physicians in the United States not to advertise their qualifications, their services or the price of those services in any way to the public.

Q.—And why is that, Doctor,

Mr. Morriss Jr.:—That would be a conclusion, if the Court please, on the part of the witness.

THE COURT:—He can state his opinion.

Mr. Morriss Jr.:—We think it is an improper conclusion and an opinion, and we object to it as such.

Mr. Harrell:—I submit, your honor, the witness has already testified and qualified as an author on medicine.

THE COURT:—I will overrule the objection.

A.—The common custom among physicians almost since time immemorial is to abstain from advertising, as described in the innumerable books, as well as in my own opinion, for the protection of the people, since it should be apparent at once that the physician who advertises and states in his advertising exceptional qualifications which he may or may not possess, and since there is no regulation of advertising of this character, the step would be to bring to the physician's consideration numbers of people who would come, not because of merit of his work, but primarily because they believed his own statement as to his special qualifications or to the fees which he charged and said to be more or less, for example, than the fees of other physicians, or as to the results he had secured, which, of course, the public would have no way of knowing had actually been secured or hadn't been secured, and, then, the custom established by use of practice among physicians is that the relationship of the doctor to the patient is such that the doctor must not vaunt his special qualifications, the fees he charges, the nature of his services, in any way to the public.

Q.—Doctor, what is the custom and practice among the physicians and in the medical fraternity in the United States with reference to new discoveries of medical science or new discoveries in surgery and surgical technic in the performing of operations?

Mr. Morriss Jr.:—We object to that as immaterial and irrelevant to any issue in this case.

THE COURT:—Overruled.

Mr. Morriss Jr.:—Note our exception.

A.—It is a precedent among physicians which has existed since time immemorial, that inasmuch as the public health is of the greatest importance for the advancement of the people and the nation, a doctor shall give freely of his new discoveries or of his operations or of his knowledge to all of the medical profession the moment such discoveries are established in order that as many people as possible may be benefited by the discovery, and with the definite understanding that the doctor shall not personally derive a profit from his discoveries or from his inventions; thus physicians publish descriptions of new drugs, new operations and new discoveries in the field of medicine as soon as they are established in order that other physicians may know of these methods and be able to duplicate them for the benefit of the sick.

Q.—Doctor, can you tell us if Dr. Brinkley has ever revealed or has published for the benefit of the medical profession his surgical technic of this new operation he refers to, or has it been submitted to the profession for criticism? *A.*—As far as I know it has never been published in any medical periodical, nor has it been generally submitted to the criticism of the medical profession.

Q.—Doctor, would you tell us, if you know, how many states of the union recognize graduates in medicine from eclectic colleges? *A.*—At the last report, which was officially published, the particular college in Kansas City, the Eclectic—the College of Eclectic Medicine and Osteopathy, wasn't to my knowledge recognized by forty-seven of the forty-eight states in the union; in other words, there was only one state which recognized that diploma.

Q.—What state was that? *A.*—The state of Arkansas.

The cross examination follows:

CROSS EXAMINATION

By Mr. Morriss Sr.

Q.—But, of course, that didn't mean that if they were licensed to practice they couldn't practice in those states, notwithstanding that they had taken that course of study among others? *A.*—It meant they couldn't practice in any state of original jurisdiction over the first examination, in some instances.

Q.—I didn't ask you that, and will you please make it a practice instead of going into the long answers, just answer my questions yes or no, as far as possible. *A.*—Yes, sir.

Q.—I say that didn't mean if they had a license, be it that they had made a study of that as well as other systems, they couldn't practice anywhere, and the fact that they got a license or diploma from the Eclectic College didn't bar them from practice otherwise? *A.*—It would bar them from practice in some states.

Q.—Regardless of whether they qualified otherwise? *A.*—It would bar them.

Q.—Notwithstanding the fact they passed the other qualifications for getting a license, the mere fact they got a diploma in the Eclectic College would bar them, is that your testimony? *A.*—The question is not clear.

Q.—Supposing they studied other systems and qualified themselves and could take the examinations and pass the tests, the mere fact that they had gone to the Eclectic School at one time would bar them, is that your idea? *A.*—A license requires—

Q.—Answer the question yes or no. *A.*—It can't be answered that way.

Q.—The mere fact that they had once studied at this eclectic school, would that bar them? Answer that yes or no. *A.*—It might bar them.

Q.—Would it bar them? *A.*—It would bar them in many states.

Q.—Necessarily, the mere fact they had studied that system? *A.*—Not the system, the school.

Q.—Suppose that some doctor had studied at various schools and the various systems approved in those states—

THE COURT:—Counsel, in order to bring this matter before us, why suppose all of those things if there is no evidence to support it? Dr. Brinkley's testimony is that he studied for three years at a school in Chicago, and then he quit for several years, and then went back and took a year's course in the Eclectic School. Is it the claim that he went anywhere else?

Mr. Morriss Sr.:—Yes, sir.

THE COURT:—He never said so in the evidence.

Mr. Morriss Sr.:—It could be shown that he studied elsewhere.

THE COURT:—Why suppose the things if there is no evidence to suppose it?

Mr. Morriss Sr.:—I am getting the viewpoint of the witness, is all.

THE COURT:—I know, but it would take too wide a range and I want to confine it to the evidence.

Mr. Morriss Sr.:—I am not going to take a wide range.

Q.—Would the mere fact that some doctor had studied at other schools and could pass any examination, would the fact, in the interest of science, that he had gone down and taken a course there, would that bar him in other states? *A.*—It would bar him in some states.

Q.—That is your idea? *A.*—That is the truth.

Q.—Have you ever practiced medicine? *A.*—Yes, sir.

Q.—When? *A.*—I have practiced medicine for the period from the time of my licensure—

Q.—When was that? *A.*—In late June 1912, until the time when I became assistant to the editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Q.—When was that? *A.*—Which was in late August 1913.

Q.—You mean you practiced medicine, then, how long? *A.*—Slightly over one year.

Q.—You practiced medicine slightly over a year where? *A.*—In the city of Chicago.

Q.—Whom did you office with? *A.*—I was at that time—do you want my program day by day?

Q.—No, sir, just whom you were officing with? *A.*—Dr. Hektoen, and I was also associated with Dr. George H. Weaver and Dr. George F. Dick.

Q.—Now, then, as a beginner you practiced about a year? *A.*—That is about all.

Q.—And that is all the medical practice you have ever had? *A.*—No, sir.

Q.—You have never been an active practitioner from that time on? *A.*—You mean offering my services for pay?

Q.—Yes, sir. *A.*—No, sir.

Q.—You have never done that since then? *A.*—No, sir.

Q.—That was from 1912 until some time in 1913? *A.*—Exactly.

Q.—That you were offering to practice medicine? *A.*—Yes, sir.

Q.—And, then, you became an employee with the Medical Association? *A.*—I became assistant to the editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Q.—That was employment, wasn't it? *A.*—Yes, sir.

Q.—And, then, you have been with the Medical Association ever since then, is that right? *A.*—Yes, sir.

Q.—And you have been editing this *Hygeia* how long? *A.*—Approximately fifteen years.

Q.—And THE JOURNAL about the same time? *A.*—No, sir, longer on THE JOURNAL because as assistant to the editor I began taking control of THE JOURNAL somewhat longer ago than that.

Q.—And who was President of the Medical Association when you began with it? *A.*—The Medical Association elects a new president-elect every year, but the presidents change every year and I would have difficulty in remembering exactly who was president each year, but I can give you a list of many of the presidents.

Q.—I asked you the question who was the President when you started with the Medical Association, and if you don't know, say so? *A.*—I don't remember exactly, that year.

Q.—When was Dr. Simmons President? *A.*—Dr. Simmons was never President.

Q.—What was his connection? *A.*—Dr. Simmons was editor and general manager of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and of the work of the association.

Q.—What Simmons is that? *A.*—George H. Simmons.

Q.—He, I believe, had been an advertising doctor? *A.*—I don't know.

Q.—Well, you have seen many of his advertisements, haven't you? *A.*—No, sir.

Mr. Harrell:—I object to this line of testimony; I don't see where it has any place in this case. Dr. Simmons is not on trial here, and it has nothing to do with this case.

THE COURT:—This is cross examination, and it was brought out by you on direct examination that ordinarily ethical doctors don't advertise, and they can test him out on that if they want to.

Q.—You have read this book, "Medical Mussolini" *A.*—I have seen it, yes, sir.

Q.—You have noticed the advertisements on page 22? *A.*—I have noticed what purports to be an advertisement.

Q.—You don't deny those are copies of Dr. Simmons' advertisements? *A.*—I merely state that purports to be a copy. That is the only one I have seen.

Q.—You don't deny those are some of the advertisements of Dr. Simmons? *A.*—I don't know of my own knowledge.

Q.—You do find it in a published book? *A.*—Yes, sir.

Q.—And, by the way, Doctor, you wrote a book and advertised it, Doctor, a book of home remedies; you wrote a book yourself and advertised that in the Chicago *Tribune*, didn't you? *A.*—No, sir.

Q.—You didn't? *A.*—No, sir.

Q.—Didn't you publish a book? *A.*—I wrote a book, but I didn't publish or advertise it.

Q.—You mean to say there wasn't an advertisement in the Chicago papers. *A.*—There may have been advertisements, but I didn't pay for or issue the advertisements.

Q.—You know there was an advertisement for the sales for "Home Remedies" in the Chicago papers? *A.*—Not for "Home Remedies."

Q.—You know there was considerable furor and criticism among some of the American Medical Association doctors about that very episode? *A.*—There was some excitement, yes, sir.

Q.—Now, Doctor, when you wrote that article about Dr. Brinkley you say you had never met him? *A.*—I had never met him to my knowledge, no, sir.

Q.—Do you know whether he had gone to the same school you went to? *A.*—I never to my knowledge went to any school that he went to.

Q.—Do you know whether he did—you don't know that, whether he did or didn't? *A.*—To which school do you refer?

Q.—Either one of the schools that you went to? *A.*—To my knowledge he never at any time was enrolled as a pupil in the University of Chicago or the Rush Medical College.

Q.—Do you know whether you had ever had opportunity to meet him and know him before you wrote this article? *A.*—I don't know that I had ever had any opportunity to meet him; certainly not to my seeking.

Q.—You are quite positive you had not, so far as you know, had any opportunity to meet him? *A.*—No opportunity of my seeking.

Q.—I didn't ask you that, I asked if you know whether you have ever been thrown in the same place he was? *A.*—I wouldn't know of it. I don't know.

Q.—You know that just a few months before you wrote this article you came over on the boat from Europe, on the same boat with him and had quarters on the same deck, I mean the same floor of the boat? *A.*—As far as I know there was no opportunity for me to meet Dr. Brinkley on the boat.

Q.—So far as you know? *A.*—Yes, sir.

Q.—Isn't it true that Dr. Brinkley made an effort to meet you, and you were out on the deck and you were sitting there reading a book and he walked around in front of you and you looked up and then you dodged back in the book and refused to recognize him or know him or meet him? *A.*—The question was did I have opportunity to meet him, and the answer is I didn't have any opportunity to my knowledge to meet Dr. Brinkley.

Q.—That is not the question. *A.*—Define the word "meet."

Q.—I asked if he and Mrs. Brinkley didn't come around to where you were sitting in a chair reading, and you refused to look up and notice him? *A.*—To my knowledge on one occasion he walked by the place.

Q.—Answer the question.

THE COURT:—I think he was answering it.

A.—I am answering the question directly and completely.

Mr. Morriss Sr.:—I asked didn't he walk by, and I asked that he answer it yes or no.

THE COURT:—I think he is answering the question and you stopped him.

Mr. Morriss Sr.:—I asked him to answer it yes or no, and I have that right to have him answer it that way.

THE COURT:—I don't think so; I think some questions can be explained.

Mr. Morriss Sr.:—Well, he can explain it later.

THE COURT:—I don't think you can fairly conduct that examination in that way.

Mr. Morriss Sr.:—I will ask it in another way.

Q.—Did they walk in front of you and stop in front of you as if to meet you? *A.*—They walked in front of me, but I don't recollect that they stopped.

Q.—You don't recollect? *A.*—That they stopped.

Q.—Who are they? *A.*—Dr. and Mrs. Brinkley.

Q.—Do you know it was them? *A.*—Yes, sir.

Q.—You did? *A.*—Yes, sir.

Q.—You knew they were on the boat? *A.*—Yes, sir.

Q.—You were on the boat, then, with them, how many days? *A.*—I think slightly over four days.

Q.—And did you know that your daughter, who was on the boat, had been playing games with Mr. Brown, the witness who testified, did you learn that at the time? *A.*—At the time my daughter stated to me that while she was practicing golf in the golf net—

Q.—I am not asking what she told you. *A.*—My only information is what she told.

Q.—Answer this question yes or no: Did you learn they were playing together? *A.*—My daughter said to me—

Q.—Answer the question yes or no: Did you know they were playing together? *A.*—My daughter didn't say they were playing together.

Q.—Answer the question—

THE COURT:—He said his daughter—

Mr. Morriss Sr.:—I asked him to answer the question yes or no. There is no need for the witness to be stubborn in answering the question yes or no, and I have that right to that answer.

A.—If the question is "did I learn they were playing together," then the answer is "no."

Q.—Did you learn she had met him or had been associated with him on the boat? *A.*—I learned that he had approached her.

Q.—Did you learn that there had been anything more than just his approaching her? *A.*—Some conversation.

Q.—Some conversation? *A.*—Yes, sir.

Q.—On her part or his? *A.*—Apparently mostly on his.

Q.—Apparently mostly on his? *A.*—Yes, sir.

Q.—Did you learn at the same time that he—or at a later day on the boat—that he was a tutor of Dr. Brinkley's son? *A.*—I learned that.

Q.—You did? *A.*—Yes, sir, I did.

Q.—Then did you learn that Dr. Brinkley's son had been playing games with her, with your daughter? *A.*—I didn't.

Q.—With the boy, I mean, your boy? *A.*—I did not.

Q.—Did you learn that Dr. Brinkley's son was on the boat? *A.*—I did.

Q.—You did know that Dr. Brinkley and his family and the tutor were on the boat, did you? *A.*—I did.

Q.—And how many days did you say you were on the boat with him? *A.*—Slightly over four days.

Q.—Was there another instance when you met them face to face and turned back and turned away? *A.*—Possibly on the day when the boat was docking.

Q.—Was there another instance after you got off of the boat when you came upon them and turned and went away? *A.*—I believe at the Hotel Waldorf.

Q.—So, you didn't only not seek him, but you avoided him and evaded any opportunity to meet them or any opportunity for them to meet you? *A.*—Yes, sir.

Q.—You had years previously published in one of these magazines an article about the doctor? *A.*—Yes, sir.

Q.—And that was an article similar in many respects to the present article, wasn't it? *A.*—Yes, sir.

Q.—And then you had published in January 1938 the article, I mean the publication mentioned, of Dr. Brinkley, hadn't you? *A.*—Yes, sir.

Q.—This was what you told your counsel was a part of a series of articles, wasn't it? *A.*—Yes, sir.

Q.—Under the large caption "Modern Medical Charlatans"? *A.*—Yes, sir.

Q.—Now, in January of 1938, you published this about Dr. Brinkley "In the obscure Kansas village of Milford, a blatant quack, one John R. Brinkley, whose professional record reeks with charlatanism of the crudest type, has for some years been demonstrating the commercial possibilities of goat-gland grafting for alleged sexual rejuvenation," didn't you? *A.*—Yes, sir.

Q.—In that article you inveighed against those beliefs and practices that you oppose, is that right? *A.*—Yes, sir.

Q.—Among other things, you stated in that article this, did you not: "The chronic invalid, weak, despairing, eager for comfort responds more readily to the laying on of hands"? *A.*—Yes, sir.

Q.—"As a result, there are legends in every religious history not only of healing but of raising from the dead by such procedures. In ancient days, men were not sufficiently familiar with the scientific tests of death to ascertain with certainty that people in a comatose state were not actually dead but living. It is quite possible for the hysteric to imitate the signs of death. It is also quite possible by the power of suggestion to cause such a hysteric to discontinue the symptoms and apparently to rise from the dead," you published that, too, didn't you? *A.*—Yes, sir.

Q.—In order words, among other things, that was a part of your belief, wasn't it? *A.*—Yes, sir.

Q.—And then, in the February issue you hadn't had any word from Doctor about your January issue, had you, when you published the February issue? *A.*—Not that I know of.

Q.—Then you published in the February issue this account, which has been read to the jury, is that right? *A.*—Yes, sir.

Q.—Do you remember when you wrote it? *A.*—I wrote the article, I believe, in the previous September or October or possibly November; I would have to verify my records on that.

Q.—When was it after you got back off the boat trip? *A.*—I reached my office about the second week in September; the article was written to read before the Chicago Literary Club in November.

Q.—We are not asking about that, and don't go off on irresponsive matters that you know necessarily extends this record. You got back about the middle of September, is that right, from the boat? *A.*—In my office about the first week of September, I believe.

Q.—Then, it was a few days later that you began writing this article? *A.*—Much later.

Q.—How much later? *A.*—I believe about the third or fourth week in October.

Q.—Just within a few weeks after you got back, at any rate, you began writing these articles about Dr. Brinkley? *A.*—Yes, sir. Not about Dr. Brinkley but about modern charlatans.

Q.—He is in there? *A.*—He is included.

Q.—You began writing about Dr. Brinkley a few weeks after you got back off of the boat. *A.*—Six or seven.

Q.—You had had some days to discuss with Dr. Brinkley his methods, had you wanted to? *A.*—Had I wanted to, yes, sir.

Q.—Had you ever come to Del Rio in the years from 1933 to 1938 to get first hand information and first hand knowledge of Dr. Brinkley's operations and practices and hospital? *A.*—No, sir.

Q.—You had never made any investigation at all? *A.*—Personally, no.

Q.—Had you ever made any request of him for information? *A.*—Personally, no.

Q.—In other words, you had never even been to Del Rio before you wrote this article? *A.*—No, sir.

Q.—Never made any effort to contact Dr. Brinkley? *A.*—Personally, no, sir.

Q.—You had never made any effort to learn of him about his practice and his operations or his reasons for it, or anything about that, had you? *A.*—I made no personal effort.

Q.—Did you ever consult any of these doctors who had worked for him and operated with him here—did you ever consult Dr. Petermeyer? *A.*—No, sir. He is an osteopath.

Q.—Did you ever consult Dr. Petermeyer? *A.*—No, sir.

Q.—Dr. Davis, did you ever consult him? *A.*—No, sir.

Q.—Did you ever consult Dr. Osburn? *A.*—No, sir.

Q.—Dr. Conn? *A.*—No. sir.

Q.—Dr. Harris? *A.*—No, sir.

Q.—Dr. Kline? *A.*—No, sir.

Q.—You said Dr. Petermeyer was an osteopath? *A.*—Yes, sir.

Q.—You referred to him on the stand yesterday as "Mister," instead of "Doctor"? *A.*—Yes, sir.

Q.—You don't recognize him even as a doctor? *A.*—I, personally, do not.

Q.—And you say you never wrote a letter to any of these men, never interviewed them, never made any effort to interrogate them or learn anything from them about Doctor? *A.*—Not that I know of.

Q.—Tell us whether you did? *A.*—I don't remember that I did.

Q.—If you did, you would remember, and would you tell us whether or not, in your best judgment, you made any direct effort to ascertain any facts from any of those men? *A.*—No, sir.

Q.—Nor from Doctor? *A.*—No, sir.

Q.—Nor any employee or nurse of his hospital? *A.*—Not personally.

Q.—You say not personally, but did you send somebody here to Del Rio to ascertain about him? *A.*—Various investigations have been made.

Q.—I didn't ask you that. *A.*—If I personally sent—no.

Q.—Did you personally have anybody come to Del Rio to make any investigation about it? *A.*—No, sir.

Q.—And did you ever ask an opportunity to witness one of these many operations that have been shown that he performed here on people? *A.*—No, sir.

Q.—And you told us yesterday that the information you got, so far as any patient was concerned, was a second hand report about some one patient who had gone to Mayo? *A.*—That had to do with financial matters, not the operation.

Q.—That is the only patient you contacted, wasn't it? *A.*—Personally?

Q.—Yes, sir. *A.*—Yes, sir.

Q.—So you never made any inquiry from any patient whether he was satisfied or helped or benefited or cured or injured, did you? *A.*—Some of the patients wrote to me.

Q.—I am asking you if you made any personal contact with or any investigation of any patient? *A.*—No, sir.

Q.—You didn't make any effort to, did you? *A.*—Personally?

Q.—Yes, sir. *A.*—No, sir.

Q.—And did you have anybody make any investigation here in Del Rio about what he was doing in reference to the literature that he was sending or receiving or the letters he was sending or receiving, did you send anybody to Del Rio for that purpose? *A.*—Personally?

Q.—Yes, sir. *A.*—No, sir.

Q.—You didn't do it yourself or have anybody do it, did you? *A.*—Not personally.

Q.—And, yet, in this article you charge him with being the arch quack of all quacks, the arch charlatan and charging him with using the mails to defraud, didn't you? *A.*—All investigations—

Q.—Answer the question yes or no. *A.*—All investigations—

Q.—Answer my question. You charged him with that, didn't you? Answer that question yes or no. *A.*—I charged him with that, yes, sir.

Q.—Without any character of investigation? *A.*—No, sir, that is not true.

Q.—Do you disclaim malice? *A.*—Yes, sir.

Q.—You disclaim it, do you? *A.*—Yes, sir.

Q.—You just had the very kindliest feeling for him, didn't you? *A.*—I had no feeling for him at all, one way or the other.

Q.—Why did you decline the opportunity time after time— *A.*—In some twenty-six years of investigations of charlatans, I have never met personally or sought the acquaintance of any charlatan.

Q.—In other words, you are now asserting to this jury that he is a charlatan, in your opinion, is that right? *A.*—Yes, sir.

Q.—And in your answer you alleged the truth of the publication? *A.*—Yes, sir.

Q.—On the stand you are claiming the truth of the publication, aren't you? *A.*—Yes, sir.

Q.—Now, are you in any way committed by any authority, governmental or other authority with the power to say who may practice medicine in the United States and who may not? *A.*—No, sir.

Q.—You are not? *A.*—No, sir.

Q.—Do you set yourself up to? *A.*—No, sir.

Q.—When did you first read this article which charged you—the book which charged you with attempting to be the Mussolini of Medicine in America? *A.*—I read that about, I think, the first time a month ago, maybe.

Q.—And shortly before that there was great controversy and furor in the medical profession about a good many of your methods wasn't there? *A.*—No, sir.

Q.—Hadn't there been a great deal of dissension about it, so much so that you have had some trouble up at Washington lately that is due to some of your practices? *A.*—No, sir.

Q.—I am going to ask the question, and I don't want you to answer it until counsel makes the objection: You were recently indicted in the Federal Court in Washington, and you are under indictment now? *A.*—Yes, sir.

Q.—And that was due to your methods, what the many doctors called your high handed methods in dealing with and trying to control the medical profession? *A.*—No, sir.

Q.—You disclaim that? *A.*—Yes, sir.

Q.—The indictment was against yourself and the Medical Association for violation of the anti-trust laws, wasn't it? *A.*—No, sir.

Q.—What was it? *A.*—The indictment involved twenty physicians practicing in the District of Columbia, and five employees of the American Medical Association; there was no indictment of the Association as such.

Q.—What about you? *A.*—I was one of the five employees of the Association.

Q.—You were indicted? *A.*—Yes, sir.

Q.—And what was that indictment for, against you? *A.*—The indictment had to do with the fact that certain hospitals in the District of Columbia—

Q.—Answer the question, what was the charge made?

THE COURT:—He was answering the question. I very much doubt the admissibility of this line of evidence, anyhow.

Mr. Morriss Sr.:—I gave counsel opportunity to object.

THE COURT:—He didn't object because he didn't mind it, but from the Court's standpoint the evidence is inadmissible; I think it is prejudical and if any objection was made I would sustain it.

Mr. Morriss Sr.:—I gave him the opportunity.

THE COURT:—You give opportunity to object to all questions that are improper. We can't try the case in Washington.

Mr. Morriss Sr.:—I realize that, but—

THE COURT:—I think you better discontinue this line of testimony.

Mr. Morriss Sr.—My thought was only with reference to his activities.

THE COURT:—He is not being tried in regard to that. I have no doubt that he has his side of that thing in Washington. Gentlemen of the Jury, you will disregard all of that with regard to this indictment, it has nothing to do with this case and is a collateral issue, and you have no business to try to try it out, and you must discard it from your mind: and I mean for the jury to do that, because otherwise I owe it to Dr. Fishbein the duty of letting him explain his side of it to you; the imputation has been cast, and I have no doubt that he has a side, but it isn't material and you are not interested in it, so you will not discuss that matter in regard to the indictment or refer to it or carry it in your minds, just discard it from your minds.

Q.—What I want to bring out, Doctor, is that there is existing an element of opposition and rebellion against your methods in the American Medical Association, is there not? *A.*—The only way I would have of knowing that would be a breaking off of some part of the membership; as I explained yesterday the membership has increased by 8,000, and no one of those said to be in rebellion has resigned.

Q.—And, yet, there are many, many thousands of physicians throughout the United States who have been members in the past and who are not now? *A.*—No, sir.

Q.—You don't mean to say there are many thousands? *A.*—No, sir, cerainly not.

Q.—On the first of January 1938, after you had written and before you had published this article, there were approximately 50,000 physicians in the United States that were not members of the Medical Association, weren't they? *A.*—No, sir, not exactly 50,000—physicians licensed to practice or in practice? I can give you the exact figures.

Q.—Physicians licensed to practice? *A.*—165,000 physicians in the United States licensed to practice.

Q.—And you said yesterday there were 111,000 members now? *A.*—Yes, sir.

Q.—But there were 8,000 less the year before? *A.*—No, sir; that was in June 1937.

Q.—So, there are approximately 50,000 licensed physicians not members of the Association? *A.*—Yes, sir.

Q.—And you know that at one time Dr. Brinkley was a member of the Medical Association, don't you? *A.*—I haven't personally investigated that point, so I wouldn't want to say yes or no.

Q.—Do you attempt to deny that Dr. Brinkley was for some years? *A.*—I don't attempt to deny it, I merely say I do not know of my personal knowledge.

Q.—You told us yesterday of the investigation, rigid rules and investigation as to qualifications to become a member? *A.*—Yes, sir.

Q.—Then, if Dr. Brinkley was a member for some years, then, that investigation had been made of him and he had been passed, hadn't he? *A.*—I would have to verify that, and, I can verify it if you wish, by telegram.

Q.—I am asking if Doctor had been a member for some years, why, he had passed that investigation and been approved? *A.*—If he had been, why, he had, yes, sir, probably.

Q.—Now, do you not know it was only after his experimentation and his operations and his work in the attempted use of glands that the medical profession raised a furor and he was expelled from the Association? *A.*—I don't know that of my personal knowledge.

Q.—Well, you would know it from the information because you were there, connected with the American Medical Association, weren't you? *A.*—I don't keep in my mind the personal lives of the entire 111,000.

Q.—Then, you wrote this article charging Doctor with being a quack and unqualified and so forth, without looking up to know whether he had even been a member for years of the American Medical Association, or not? *A.*—For every statement made in the article, I had—

Q.—Just a moment, please, just answer the question, and don't argue the matter with me, just answer the question. *A.*—What is the question?

Q.—You wrote that article without any investigation to see whether for years he had been a member of the Medical Association, or not? *A.*—That information I didn't have before me.

Q.—And you didn't look it up? *A.*—I did not.

Q.—And, now, with reference to the matter of Doctor having been earnestly seeking to put his new ideas and his new experiments in medical—his new research and the results of it to the medical profession—you told us that when a man has a new idea that he thinks is beneficial he tries to give it to the public, is that right? *A.*—He submits it to scientific periodicals.

Q.—Doesn't he give it to doctors and call them in, noted doctors? *A.*—Yes, sir.

Q.—You did know he had, among his early operations, called Dr. Nesselrode? *A.*—Yes, sir.

Q.—He had called Dr. Nesselrode in to witness the operation, hadn't he invited him in, and you learned from the doctor that he had been invited in to witness the operation? *A.*—He invited him in connection with the revocation of the license, that is all I know.

Q.—Didn't he invite him to witness the operation? *A.*—In connection with the revocation of the license.

Q.—That is the qualification you are putting on it now? *A.*—That has always been the qualification.

Q.—Did you say anything about that a while ago? *A.*—Yes, sir.

Q.—You testified in answer to that to your counsel? *A.*—Yes, sir.

Q.—You testified that it was in connection with some matter of investigation or in revoking the license? *A.*—Yes, sir.

Q.—You had already told that, had you? *A.*—Yes, sir.

Q.—At any rate, you know that when the matter was questioned why, then, at least, at that time, if not before, he invited that doctor in to witness his operation? *A.*—Yes, sir.

Q.—You do, as a matter of fact, from common report, know that he called many doctors in to witness the operation, don't you? *A.*—I do not.

Q.—You know he traveled far and near to perform the operation and demonstrate it to the public and doctors? *A.*—No, sir.

Q.—Did you know from information that he performed it in many places? *A.*—No, sir.

Q.—Or various places? *A.*—No, sir.

Q.—You don't know about that? *A.*—No, sir.

Q.—You didn't consult Doctor before you wrote this article to learn whether or not it was his earnest desire to help ailing humanity when he did that experimentation? *A.*—I heard him say that on the radio.

Q.—You didn't consult him about it to find out anything about his views on it? *A.*—No, sir.

Q.—With reference to the operations that he performs now in the main, which is this prostate operation, you never wrote him nor questioned him nor interviewed him to find out his views, his own personal views about the benefit and the need of that, did you? *A.*—No, sir.

Q.—Nor the good of it, and you have told us as to those operations—and neither did you talk to any patients of his? *A.*—No, sir.

Q.—Are you prepared to say, then, you never witnessed that operation? *A.*—I never witnessed the operation.

Q.—Either by him or anybody else? *A.*—No one else does it, I believe.

Q.—You don't deny that many doctors perform that operation that he performs now days, do you? *A.*—I don't know of any doctor who transplants goat glands.

Q.—I didn't ask you that. *A.*—That is what the article says.

Q.—In the article you say he discontinued that? *A.*—Yes, sir.

Q.—You knew at the time he discontinued that operation years before? *A.*—Yes, sir.

Q.—All right, now, I am talking about the operation that he principally performs now on sick men, the prostate operation? *A.*—Which prostate operation?

Q.—The prostate operation which you heard Dr. Petermeyer describe. *A.*—May I ask if you refer to the operation involving the injection of mercurochrome or the prostatic resection by the introduction of the tube into the urethra?

Q.—I refer to both, but primarily the first. *A.*—I know few, if any, doctors who practice the operation that involves cutting the vas or tube and injecting mercurochrome.

Q.—Don't you know that doctors throughout Texas are doing that operation? *A.*—I don't know of any well recognized urologist who does that operation.

Q.—Do you know any of the doctors of San Antonio? *A.*—I know quite a few doctors in San Antonio.

Q.—Do you know whether any of the doctors in this region, any doctor in this region performs that operation? *A.*—In Del Rio?

Q.—Yes, sir. *A.*—I know very little about the operations done in Del Rio in general.

Q.—In other words, you don't know, then, whether doctors who have had the best opportunity to investigate and to see and talk with patients and learn the results, and so forth, have gone to performing that operation or not, do you? *A.*—Will you restate the question?

Q.—In other words, you don't know, then, whether doctors who have had the best opportunity to investigate and see and talk with the patients and learn the results, and so forth, have gone to performing that operation or not, do you? *A.*—That is a complicated question. In general, I know very little about whom the patients of Dr. Brinkley have gone to next.

Q.—Do you know anything—have you read anything, I will put it, in the medical journals about this type of operation? *A.*—I have read about various types of operations on the vas.

Q.—Now, then, do you not know that the second operation where, as Dr. Petermeyer said, the condition is so bad as to preclude the probable benefit by the first operation, that is, the urethral operation, that is commonly performed by many doctors all over the country, isn't it? *A.*—I didn't understand from Dr. Brinkley's broadcasts that he performed that operation.

Q.—I didn't ask you that. *A.*—You mean the operations performed by Dr. Petermeyer?

Q.—You heard Dr. Petermeyer describe Dr. Brinkley's operation by the urethral method? *A.*—You mean the resection operation—that is a very common operation.

Q.—That is a very common operation where they have a very bad condition? *A.*—It is an operation for the enlargement of the prostate, and that is surgical.

Q.—That is what they call the second operation? *A.*—That is a surgical operation.

Q.—That is the second operation? *A.*—I don't know what he calls it, but it is called a surgical operation.

Q.—If the condition is bad, but not absolutely desperate, they try that operation, don't they, that is, the urethral method, isn't that true? *A.*—That operation is performed for simple enlargements of the prostate without any evidence of a malignancy.

Q.—Then, the only thing they can do, if that can't cure them, is remove the gland entirely? *A.*—By surgery.

Q.—Remove the gland? *A.*—Yes, sir.

Q.—And they couldn't very well remove it without surgery? *A.*—The doctor states he doesn't do any surgery on the prostate, and it occurs to me that that is very radical surgery.

Q.—Do you know of any method by which anybody could remove it without surgery? *A.*—No, sir, and that is the reason I was surprised to hear it.

Q.—I am asking about the entire removal. *A.*—That is surgery.

Q.—That is the last and desperate operation? *A.*—It is not too desperate.

Q.—That is the last operation? *A.*—It is a difficult operation.

Q.—That formerly was the only method, that is, in any recent years, up until the last decade or so, that was the only operation? *A.*—Surgical removal was the adopted operation until the development of the transurethral prostate resection.

Q.—That involves the cutting away of a considerable portion of the prostate? *A.*—Yes, sir.

Q.—I mean of the gland. *A.*—Yes, sir.

Q.—And that is by a process of going up there with the instruments and cutting it away and taking it out? *A.*—Just slight portions are removed at times, yes, sir.

Q.—And have you ever performed that operation? *A.*—No, sir.

Q.—Have you ever performed an operation of the removal of the prostate entirely? *A.*—No, sir.

Q.—Have you ever performed or attempted to perform this operation, what Doctor calls his technic? *A.*—He has so many technics, but if you refer to the injection of the mercurochrome in the vas, I have not.

Q.—He has many? *A.*—He seems to have many technics.

Q.—You heard Doctor testify, Dr. Petermeyer and him both, as to the name of the operation that he calls the new technic? *A.*—Dr. Petermeyer called it—he said it used to be called one thing, and now it is called the surgical technic.

Q.—Have you ever performed that operation? *A.*—No, sir.

Q.—Have you ever witnessed it? *A.*—The injection of the mercurochrome in the vas?

Q.—I asked if you ever witnessed that operation? *A.*—No, sir.

Q.—Are you meaning now to say that all they do is inject mercurochrome, is that the meaning you want to convey to the jury? *A.*—I merely wish to convey to the jury that I merely understood Dr. Petermeyer to describe several technics, and among those technics there was the injection, the cutting of the vas and the injection of mercurochrome, and that seemed to be one.

Q.—Did you learn from Dr. Petermeyer, or gather from him, that that was all he did, just cut the vas? *A.*—There were many combinations; apparently Dr. Petermeyer was wishing to say they do various combinations of all of these technics.

Q.—Didn't he tell about the ligation there, and all of that? *A.*—No physician—

Q.—Answer the question. *A.*—No. You do not seem to understand the surgical technic.

Q.—Didn't he say he didn't cut but tie? *A.*—Sometimes they cut and sometimes they tie.

Q.—The ligation is tying? *A.*—Yes, sir.

Q.—And he told you they don't ordinarily cut but tie them off? *A.*—I think the evidence shows what he testified.

Q.—Are you trying to convey that you have the impression that he only just opened and put in the mercurocrome, and that is all? *A.*—Certainly not, and I didn't say that.

Q.—Are you trying to minimize or belittle the operation when you speak about the method of injecting mercurochrome? *A.*—I wouldn't minimize any attacks on the human body of that type.

Q.—What do you mean by attack on the body. *A.*—Any opening of the human body is referred to sometimes as an attack on the body.

Q.—Are you trying to convey the idea that in your opinion that operation is not beneficial? *A.*—In my opinion there is no evidence scientifically collected and established that that operation is beneficial.

Q.—And, yet, while the evidence shows that he has operated on many thousands of people for that, you never talked to one of them, is that right? *A.*—The patients?

Q.—Yes, sir. *A.*—His patients?

Q.—Yes, sir—and you say you never performed it or seen it performed, and you never talked to a man that had it performed on him, have you? *A.*—No, sir. May I correct that? One man I did see who had that operation performed on him by another surgeon, and I would like to correct that statement in that manner. He just came to my mind.

Q.—How did you know it was the same operation? *A.*—The man described it to me, described to me the operation he had performed upon him by this surgeon.

Q.—The man himself described it? *A.*—Yes, sir.

Q.—The surgeon didn't? *A.*—No, sir.

Q.—Now, Doctor, you say you did publish and offer for sale a family doctor book? *A.*—No, sir.

Q.—Telling people how to treat themselves at home? *A.*—No, sir.

Q.—Do you have a copy of that book with you? *A.*—No, sir; I don't carry it with me.

Q.—Do you have it? *A.*—Yes, sir, but I don't carry it.

Q.—What is it? *A.*—"Modern Home Medical Adviser."

Q.—And how long ago was it gotten out? *A.*—It was gotten out approximately four years ago, four or five years ago.

Q.—That was for home use? *A.*—That was a book of advice.

Q.—Was it for home use? *A.*—Yes, sir.

Q.—And you don't deny that the book was advertised in the Chicago *Tribune*, do you? *A.*—It is now advertised in many newspapers in the United States.

Q.—You don't deny it was advertised in the Chicago *Tribune*? *A.*—The ads in the *Tribune* were small.

Q.—Do you deny it was advertised in the Chicago *Tribune*? *A.*—I don't recollect any advertisements in the Chicago *Tribune* until the last two weeks.

Q.—Do you deny it was advertised in the Chicago *Tribune*? *A.*—Recently?

Q.—I have asked you seven or eight times if you deny it was advertised in the Chicago *Tribune*. *A.*—No, sir.

Q.—Don't you know it was? *A.*—Yes, sir.

Q.—Don't you know that the complaints piled in from doctors about your advertising the book? *A.*—No, sir.

Q.—You don't know that? *A.*—I know there were complaints, but they didn't pile in.

Q.—They didn't pile in? *A.*—No, sir.

Q.—But the members of your association complained about the advertisements of your book? *A.*—I think a total of six members.

Q.—Six members? *A.*—Yes, sir.

Q.—How about the other practitioners who weren't members, how about that, was there some of them? *A.*—I don't know.

Q.—Now, what does it cost a year for a doctor to be a member of the Medical Association? *A.*—Eight dollars in the American Medical Association for Fellowship in the Association, and in each county and state society the dues vary according to the county and the state society.

Q.—I asked about the American Medical Association. *A.*—To become a Fellow of the American Medical Association a member pays his $8 and subscribes for THE JOURNAL, and that is included in the $8.

Q.—There are many sources of income which the American Medical Association has besides the mere matter of the doctors' dues and fees? *A.*—Outside of THE JOURNAL it is all outgo, there is nothing else coming in, and it is all expenditure.

Q.—You have THE JOURNAL and the *Hygeia*? *A.*—Everything else loses money except THE JOURNAL.

Q.—I didn't ask you that. *A.*—You said income—net income or gross.

Q.—I am asking about the income? *A.*—Gross income from subscriptions?

Q.—What is the subscription to the *Hygeia* per year? *A.*—It varies as to whether one subscriber takes it for one year or two years or five years, or in groups, from $1.25 a year up to $3.

Q.—What is one person a year? *A.*—One person a year is $3.

Q.—And it carries advertisements all of the time? *A.*—Yes, sir.

Q.—Many advertisements of all sorts? *A.*—Not enough.

Q.—In other words, it sells space to advertisers? *A.*—Yes, sir.

Q.—And in addition to that, you spoke of the 125,000 subscribers, and do you admit there are that many? *A.*—Yes, sir.

Q.—And in addition to that it sells on all of the newsstands, practically, of account, doesn't it? *A.*—No, sir.

Q.—It doesn't? *A.*—Not on all by far. It sells on approximately a thousand newsstands.

Q.—Does it sell on newsstands in all of the large cities? *A.*—On some, probably.

Q.—You heard the testimony that it sold at several different places? *A.*—I can tell you how many copies are sold on the newsstands.

Q.—You heard the testimony that it was sold and carried in several different places on the newsstands in Del Rio, you heard that? *A.*—Yes, sir.

Q.—And would that be true generally of a town the size of Del Rio? *A.*—Yes, sir; all towns of approximately this size, I imagine, at least one newsstand would have the magazine.

Q.—And it is sold by news butchers on the train and is always carried by them on the trains? *A.*—No, sir, not that I know of.

Q.—You won't say that it isn't? *A.*—I never saw it on the train, and I don't know that our circulation department has made such an arrangement.

Q.—Is there any state in the union where it does not sell? *A.*—No, sir; it sells in practically every state.

Q.—You said you could tell us how many copies are issued for general sale aside from the subscriptions? *A.*—The newsstands sale would approxiate about 2,000 copies or more per month.

Q.—And the magazine is subscribed to by most of the doctors, isn't it—by many doctors? *A.*—No, sir.

Q.—By many doctors? *A.*—Seventeen thousand.

Q.—Seventeen thousand doctors? *A.*—Yes, sir.

Q.—Now, those magazines are left in their waiting rooms for their patients to read? *A.*—The doctors complain that the patients take them away.

Q.—They are put on the table to read? *A.*—Yes, sir.

Q.—And, of course, you couldn't estimate—you have no way of estimating how many persons read the one magizine, we will say, just the one copy? *A.*—I wouldn't know.

Q.—You would say that generally speaking quite a number of persons read each magazine, would you not? *A.*—I hope so.

Q.—You would think so? *A.*—Yes, sir.

Q.—Especially where it is left in a doctor's office? *A.*—Yes, sir.

Q.—And patients call day by day? *A.*—Yes, sir.

Q.—And they are left there many months? *A.*—Yes, sir.

Q.—And many people throughout the United States have an opportunity to read that article? *A.*—Yes, sir.

Q.—And that paper? *A.*—Yes, sir.

Q.—And that magazine? *A.*—Yes, sir.

THE COURT:—We will take our mid-morning recess, gentlemen.

At this time a recess was taken, after which the following proceedings were had, in the presence of the jury:

Questions by Mr. Morriss Sr.:

Q.—Doctor, concerning the circulation of the *Hygeia*, do you not make periodic reports to the authorities as to the amount of circulation? *A.*—Yes sir.

Q.—Do you remember when the last one was made? *A.*—We make a report each year to the House of Delegates.

Q.—Do you remember when the last one—I am talking about the governmental authorities? *A.*—No, sir, no report is made on circulation to any governmental authority.

Q.—You make no report on circulation to state authorities? *A.*—No, sir.

Q.—Nor to the federal agencies? *A.*—No, sir.

Q.—But you made it to whom? *A.*—The House of Delegates of the American Medical Association.

Q.—Do you remember when you made it last? *A.*—One was made last June in San Francisco, and another is about ready to be made now.

Q.—Do you remember what the reports showed last June in San Francisco? *A.*—Exactly how much loss was sustained during the year?

Q.—I am not asking that. How many copies of *Hygeia* were published? *A.*—I believe approximately 125,000 monthly.

Q.—Is that as near as you can give it to us? *A.*—Yes, sir. I am not directly in charge of circulation.

Q.—But as editor and as having been editor all of the years, you do not know? *A.*—Approximately.

Q.—You don't know exactly? *A.*—No, sir.

Q.—That was subscribers? *A.*—I don't know exactly.

Q.—I say there was that many subscribers? *A.*—No, sir; I believe the number of copies issued, and that would be separated from the subscribers.

Q.—You don't know how many number of subscribers—if you don't know, why, say so? *A.*—I don't know exactly.

Q.—You said something yesterday about your having heard Dr. Brinkley on the radio offering some pills for a bill or a dollar, or something of that kind, you say you heard that? *A.*—I heard him offer a solution in a broadcast asking people to send him a bill, and not—

Q.—I didn't ask you that. *A.*—I am repeating the testimony.

Q.—I say, didn't you hear him offer a bottle of pills for a dollar? *A.*—I never said a bottle of pills.

Q.—You said in your article, you spoke about a bottle of pills that he sold over the radio? *A.*—The article stated, I believe, the word "pill."

Q.—I believe it did. *A.*—Yes, sir.

Q.—Your counsel didn't ask you about that. Whom did you get that information from, that he sells pills over the radio? *A.*—I had before me the accumulated material from the Bureau of Investigation.

Q.—That is your answer as to why you made that statement? *A.*—I probably made the statement for that reason. I might have had some material of that sort.

Q.—I am asking you if that is the best excuse you can give to that statement? *A.*—I don't conceive of it as an excuse.

Q.—I am asking you if that is the best excuse for publishing that? *A.*—I don't conceive of it as an excuse.

Q.—I didn't ask you that? *A.*—Yes you did.

THE COURT:—The way you frame the question the witness is not going to answer it without an argument.

Q.—You have no justification for that save and except you had before you some material of some sort? *A.*—And that I heard him on the radio relative to a solution.

Q.—And as to a solution? *A.*—Yes, sir.

Q.—And that is all you have on that? *A.*—Yes, sir.

Q.—When was it, by the way, that you heard him, claim you heard him on the radio and heard him speak of the solution bottle? *A.*—Some years ago.

Q.—How long ago? *A.*—I would say approximately four or five years ago, but I wouldn't be sure exactly.

Q.—Where from? *A.*—I believe from the station in Mexico.

Q.—The station here? *A.*—In Mexico.

Q.—That is the best that you can give us on that, is it? *A.*—Yes, sir.

Q.—Doctor, you spoke about these hospitals that are investigated, and so forth, and did you not know that the Brinkley Hospital in Milford, Kansas, was for several years a member of the American Hospitals in good standing? *A.*—I did not.

Q.—The American Hospital Association? *A.*—I did not.

Q.—Do you deny it? *A.*—I can't deny it if I didn't know it.

Q.—You just don't know whether that is true or not? *A.*—That is right.

Q.—You told us yesterday that what the requirements are for a hospital to be a member, that is to say, they are investigated by investigators, and they are investigated before they become members of the American Hospital Association? *A.*—I didn't make that statement.

Q.—What is the statement about the investigation before they become a member? *A.*—I referred only to the investigation made by the Council on Medical Education and Hospitals by the American Medical Association, it having to do with two lists, a list of acceptable hospitals or registered hospitals and a list of hospitals approved for interns.

Q.—But, at any rate, they are investigated before they become members? *A.*—Before they are registered by the American Medical Association?

Q.—Doctor, do you know it to be historically true that the medical profession has always been very slow to accept innovations, do you know that? *A.*—Historically true?

Q.—Yes, sir. *A.*—Some innovations, and others very promptly.

Q.—Say, for instance, when Wise discovered the childbed fever? *A.*—You refer not to Wise but to Semmelweis.

Q.—Yes, sir. There was great opposition against it a long time? *A.*—The discovery was made simultaneously by Oliver Wendell Holmes in this country, it was suggested by Holmes in this country, and by Semmelweis, and neither submitted proof but merely made the suggestion, and until the proof was established the medical profession delayed the acceptance of the concept.

Q.—Didn't they run him out of the country? *A.*—Who do you mean by they?

Q.—The medical profession. *A.*—Of this country?

Q.—Where he was. *A.*—Where was he?

Q.—If you know? *A.*—I know the life of Semmelweis, and he wasn't, to use good language, he wasn't forced out of the country in which he was, but he departed.

Q.—He departed? *A.*—Yes, sir.

Q.—Because of the furor raised among the doctors for what he claimed? *A.*—Because of his inability to gain acceptance of his concepts.

Q.—I wonder if you know whether Harvey's circulation of the blood, when he discovered it, was accepted very readily? *A.*—The medical profession of his time, which was approximately 311 years ago, failed to accept his theory until it had been established by him by evidence.

Q.—Until he had established it? *A.*—The burden is always on the innovator to establish his concepts.

Q.—Don't you know generations went by and condemned him very bitterly? *A.*—I didn't know that.

Q.—You didn't know that? *A.*—No, sir.

Q.—What about the vaccinations, were they slow to accept that, or did the medical profession accept it readily? *A.*—I didn't conceive of vaccination as a theory. When Edward Jenner established vaccination, he first made the statement based on the study of a dairy maid—

Q.—I am asking you was it accepted readily or slowly? *A.*—You seem to ask for history, and I am giving the history to you.

Q.—I am asking if it was accepted readily.

THE COURT:—If you are going into that line of examination the Doctor is entitled to make his explanation; but I doubt the pertinency; it is, of course, very interesting and it is of interest to me and I am sure the jury, but you can't compress it down into any narrow limits, and if you ask those questions you have to let him answer it in his own words.

Mr. Morriss Sr.:—I think the question is apparently in reference to innovations, which the doctor here has, and the question of their acceptance.

THE COURT:—That is a matter of argument. If you want to go into it I will let you, and there is nobody objecting to it, and I won't object to it, but if you ask the questions you will have to let him answer.

Q.—Jenner's vaccination against smallpox was very slow in acceptance? *A.*—Not for those times, but it would be slow now.

Q.—Pasteur's dog vaccine for hydrophobia, that was slow in acceptance? *A.*—Not for those times.

Q.—He was very seriously condemned about the fool theory? *A.*—By some physicians.

Q.—And the tuberculosis bacilli, that was by Koch, wasn't it? *A.*—Yes, sir, the discovery by Koch of the germ of tuberculosis.

Q.—And they condemned him for a long time for that? *A.*—No, sir.

Q.—They didn't? *A.*—No, sir.

Q.—Is it true or not that the medical profession has appeared to be slow to accept and disposed to condemn any new thing or innovation in medicine? *A.*—Within the last twenty years the medical profession has accepted almost immediately insulin for diabetes, liver extract for pernicious anemia; the prostate operation is accepted by scientific urology. I would say that they accept them nowadays too rapidly; so rapidly, in fact, that the government has passed a law, and asked them not to be too rapid, and has tests for the drugs before they are accepted, and that applies to therapeutic devices and foods.

Q.—Have you noticed throughout the history of the medical profession that they were rather slow and critical of innovations? *A.*—They never accept without evidence.

Q.—And they have bitterly condemned for some generations many—or for many years, many innovations that proved to be of great benefit to mankind? *A.*—I can't answer the question without the definition of the word "they."

Q.—The medical profession, many members of the medical profession, the body of the medical profession, the body of the members of the medical profession? *A.*—I would say in general the statement is not fair.

Q.—You would say that as to those various things I asked you about? *A.*—You haven't been quite fair.

Q.—I haven't been fair, is that it? *A.*—Yes, sir.

Q.—And wherein, then, have I not been fair in asking you the questions? *A.*—The nature of the question was such as to attempt to throw disrepute upon the medical profession for their delay in accepting new announcements of discoveries until the investigator or introducer of the discovery had established by scientific evidence the real worth of his proposed innovation or technic.

Q.—That is your argument on that matter, is it? *A.*—That is no argument, it is a simple statement of truth.

Q.—Do you deny now that Dr. Brinkley is licensed today in at least four states to practice medicine? *A.*—To my knowledge he is licensed at present in Texas and Arkansas, and his license was revoked in Connecticut.

Q.—I didn't ask you anything about that, whether his license was revoked.

Mr. Morriss Sr.:—This witness, I think, has mentioned that perhaps fifty times in his testimony here, but wholly without being asked about that, and I will ask the Court to instruct the witness to answer my question.

THE COURT:—I think there is evidence in regard to the matter. The way you frame your questions, Counsel, invites an argument; instead of asking a question you say "Do you deny that," and that is a signal of combat immediately; you ask for an argument in the way you frame the question.

Q.—I will ask you, yes or no, if you deny that today he is licensed in Tennessee?

THE COURT:—You can't require him to answer yes or no every time.

Q.—Do you deny he is today licensed to practice medicine in the state of Tennessee? *A.* I don't know about Tennesse.

Q.—Do you know whether he is licensed in the state of Missouri today? *A.*—I don't know.

Q.—So, you can't deny that Dr. Brinkley today has licenses to practice medicine in as many as four states of the union? *A.*—I know he is licensed in Arkansas and Texas, and I do not know of any other licenses.

Q.—Do you know whether he was ever licensed in Tennessee? *A.*—I don't know.

Q.—Do you know whether he was ever licensed in Missouri? *A.*—I could not tell you without verifying it, but I can verify it.

REDIRECT EXAMINATION

By Mr. Harrell:

Q.—Now, Doctor, regarding meeting Dr. Brinkley on the *Normandie* on this return trip from Europe in 1937, will you tell us what reason, if any, you had, that is, when you saw Dr. Brinkley, for not pursuing him and making his acquaintance? *A.*—In the first place, I had never been introduced to Dr. Brinkley by any one in whom I would have confidence; and, frankly, because of my position I am constantly sought by many people and I must find out the nature and character of the people before I make their acquaintance, and, in the second place, having recognized Dr. Brinkley from his pictures, primarily, I remembered that at various times Dr. Brinkley had brought suit against me and against the American Medical Association and against various other publications for various amounts of money, and I didn't conceive that it would be the proper part for me to perform in order to seek out the acquaintance of any one who had at various times brought suit against me and against the American Medical Association and various publications for damages and for other reasons.

Q.—Now, Doctor, regarding your medical practice and study, will you tell us—I don't believe it was brought out—if you attended any clinics during the period of time since you graduated from medical school? *A.*—My position is such that I am constantly visiting all the important clinics and hospitals of the United States in order to obtain at first hand information concerning any discoveries which seem to be of importance and well established in the field of medicine; I visit the Mayo Clinic at least once each year, making rounds with Dr. Will Mayo and seeing patients and operations; within the past three weeks I visited the New York Hospital, where I saw Dr. Du Bois and Dr. Cattell in an investigation having to do with the detection of pain associated with surgical procedures; I have visited within the past year, and every year, at least four or five leading hospitals and institutions of research such as the Rockefeller Institute, the Nelson Morris Institute, recently the Cincinnati General Hospital where I learned at first hand about the use of nicotinic acid in pellagra, and sulfapyridine in the treatment of pneumonia; I have frequently seen operations on prostate glands performed by surgeons of repute who were members of the American Urological Association.

Q.—Doctor, there is some mention made here of a certain book this morning, "Medical Mussolini," and do you know anything about this book? *A.*—Well, I have characterized the book as a scandalous work, and the author has published it and circulated it; I may say in advance that I never answer any personal attacks made upon me; I believe my record stands for itself.

Q.—The author of this book is the same Morris A. Bealle who was formerly the editor of a certain magazine entitled *Plain Talk* magazine, is that right? *A.*—Yes, sir.

Q.—Doctor, will you tell us if Dr. Brinkley, to your knowledge, has ever submitted his technic for his operation for reduction of the prostate to recognized medical journals of the United States? *A.*—Not to my knowledge; I could say it has not been printed in any recognized medical journal.

Q.—Now, there is mention made here, Doctor, of a certain book of which you were the author, "Modern Home Medical Adviser," and will you tell us the circumstances under which that book was published and any explanation you have regarding the publicity. *A.*—The publishers asked me to prepare for them a book of advice to the public as to the nature of most diseases and the best methods of preventing such diseases and asked me also to discuss such things as the average family could use in a family chest without any danger of harm to them; not wishing to take the entire responsibility on myself, I asked twenty-six of the leading specialists in the United States, including Dr. Joslin, the leading authority on diabetes, and Dr. Russell Wilder, specialist on vitamins and diet, and including many others, to write articles describing the various diseases of the human body and the best methods of preventing them, and that was prepared by having the men write an article in a scientific manner; and since many weren't capable of writing so that the public could understand, and since it is a part of my accomplishment to rewrite material in a form that the public understands easily, these articles were edited and rewritten and sent to the men for their approval and then published in the book, and then the book was offered for sale in the ordinary book stores. I may say that I write the books and do not sell them and do not advertise them; in ordinary publication one submits a book, after it is written, to the publisher, and the publisher then publishes it and promotes the book. The book has been sold in various ways, and it has been used as a premium with such leading newspapers as the New York *Post* and the Chicago *Times* and the Philadelphia *Record*, and has also been used as a premium by *Colliers' Weekly;* the book has a recognized status in the field of public health education.

Q.—Now, when you said in this article, Doctor, in substance or in exact words, "You send your dollar and you get your pill" with reference to Dr. Brinkley selling this medicine over the radio, or answering these letters, what did you mean by that? *A.*—I may say that in writing an author—

Mr. Morriss Jr.:—We desire to object to that; the language is plain and not ambiguous, and it is not a subject of his testimony as to what he intended by it.

THE COURT:—I think it would be admissible. I will overrule the objection.

Mr. Morriss Jr.:—Note our exception.

Q.—There are certain terms in all languages known as idioms, like "you pays your money and you takes your choice," and this is "you send your dollar and you get your pill," and the word "pill" is used as "remedy"; and that might be used and applied to any sort of figurative language used in that way; and when I testified I stated specifically that I had in mind the solution offered over the radio with the statement that the patient need not describe the symptoms, merely put the name on a piece of paper and send it with a bill, after which the remedy would be sent.

RE-CROSS EXAMINATION

By Mr. Morriss Jr.:

Q.—About your book, did you mean to convey the idea that you weren't responsible for it being advertised, that it was left to the publisher, and you mean to say you didn't get anything out of the sales? *A.*—I derive income from writing; that is my profession.

Q.—From that book? *A.*—Yes, sir.

Q.—You didn't mean to convey that you didn't get any benefit out of it being advertised? *A.*—I don't pay for the advertising or the promoting.

Q.—And you got an income for your writing? *A.*—Yes, sir.

Court then recessed.

TESTIMONY OF A. I. FOLSOM

Dr. A. I. Folsom testified that he is a physician, residing in Dallas, Texas, practicing thirty-one years, specializing in urology, a member of various medical societies and of the American Board of Urology. The evidence then proceeded:

Q.—Do you know who Dr. Brinkley is, Dr. John R. Brinkley? *A.*—I know him by reputation only.

Q.—Is he a member of any of those boards or associations which you have mentioned? *A.*—Not that I know of. I think he is not.

Q.—Do you know whether or not in the past Dr. Brinkley has advertised himself as a goat gland specialist? *A.*—He has.

Q.—Now, Doctor, I will ask you if in your opinion it is physically possible to transplant the testis of a three weeks old goat into the testis of a human and have that goat gland live? *A.*—It is not.

Mr. Morriss Sr.:—Just a moment. We object to that, may it please the court. The testimony definitely shows the fact that the doctor has not even performed that operation since 1932 or 1933, and that his work has been in the prostate work, prostate gland, ever since that time, and was when this article was written. The article itself takes notice of the fact that it wasn't any longer his practice, and the defendant has testified that he understood that and knew that long before he wrote this article, and therefore that is just building up a straw man to try to knock down. That has nothing to do with the case. We admit of course the fact that the article mentioned the past practice, but we think it has no probative force here and that it would be irrelevant and immaterial and incompetent to establish any issue or defense in this case; and I have stated about the time, it is too remote and shows a practice that—that the doctor himself, the plaintiff, explained how long and why it had been discontinued, and we would say too that no predicate has been laid, and this witness is not shown to be qualified on that question. Unless he has shown himself to be qualified on that matter it would be speculative on his part.

THE COURT:—I think that the sweep of this article that is declared on here is broad enough to put into issue Dr. Brinkley's entire professional activities, and I don't think that it could be fairly limited to just what he has been doing in the last few years, so I will overrule your objection on that ground. Now, with regard to the qualification of the witness, I think his testimony as to his training and experience is amply sufficient to warrant the court admitting his evidence. The weight to be given to it, of course, is to be determined by the jury. Overrule the objection.

Mr. Morriss Sr.:—Note the exception.

Q.—Will you answer the question, Doctor, or did you? *A.*—I think I did.

THE COURT:—He answered it could not be done.

Q.—Now, Doctor, in connection with your practice in the field of urology, have you ever dissected and examined and made a study of human testicles? *A.*—I have.

Q.—Have you—well, upon how many such occasions? *A.*—That would be difficult to estimate. I taught anatomy for three years and dissected anywhere from twenty to forty bodies every year, and in addition to that during thirty years or more I have been practicing medicine I have operated on many of them. It would be rather difficult for me to say just how many.

Q.—Have you kept up with any literature on the subject regarding the nature and construction of the human testicle? *A.*—I have.

Q.—Now, Doctor, as a result of that will you please explain to the jury why, in your opinion, the goat gland cannot live after transplantation into the human? *A.*—The principal reason is because of the fact that the blood supply of the piece of tissue that is transplanted—in other words, the vessels from the patient into whom the piece of tissue is transplanted—does not have a chance or time to form blood vessels into this piece of tissue. The testicular tissue is a rather delicate tissue, and for that reason it dies before the blood vessels can make their way into the piece of tissue.

Q.—What would you say as to the fact that when a pocket is prepared into which the goat gland is inserted, that human blood rushes forth and could then be absorbed into the goat gland, causing it to have a blood supply? *A.*—The blood itself which would rush into there as a result of the pocket being prepared is purely a temporary thing, that is simply the hemorrhage incident to the operation. The blood supply upon which the piece of testis would have to depend for its living would have to be as a result of the slow, gradual growth of small blood vessels from the testicle into the piece of tissue.

Q.—Would that rushing forth of the human blood provide a temporary blood supply that would sustain life of the goat gland? *A.*—No, it would not. The more blood that rushed in there at the time of the operation would rather hinder the thing rather than help it because it would tend to kill it quicker than it would otherwise.

Q.—Now, Doctor, in your opinion is it possible ever successfully to transplant glands from one animal to another? *A.*—It has not been found successful; no, sir.

Q.—Do you know that it has been found unsuccessful? *A.*—It has been found unsuccessful. It has been done experimentally many different times, and it has never been found successful.

Q.—Now, Doctor, for the benefit of all of us here concerned with this, will you explain just briefly and in language that we can understand the construction and operation, in general, of the male genital system. *A.*—Well, the principal—you want principally the testis and prostate?

Q.—Beginning with where the sperm is produced to when it leaves the body. *A.*—The sperm is produced by the testis or testicle, which is a gland made up of a large number of secreting tubules, little small tubes that are wound in and around each other and in a mass and are held together by a membrane bone outside, which gives the testis its form, and then at the upper end of the testicle these tubules are collected together in a few small tubules, and they pass from the testicle out into a structure known as the epididymis. Then there comes off a little duct known as the vas deferens, or a little tube known as the vas deferens, and it is through this tube that the sperms which are manufactured in the testicle are carried, through this little tubule in the epididymis, and they are finally carried up this little duct through the groin and into the abdomen, and at the base of the bladder this duct expands, gets a little larger, and then there is a little by-pass off into a place known as the seminal vesicles. That is a little hollow structure about the size of a little glove finger that is irregularly arranged, and the sperms are stored in this seminal vesicle. Then coming off from the seminal vesicles is a much smaller tube known as the duct, and that opens into the floor of the prostate gland, and that is where the semen, which is manufactured in the testicle and transported through the vas deferens and up into the seminal vesicles, is finally delivered into the channel of the urethra. The prostate gland itself is a gland structure which is about the size of an average sized English walnut. It is made up of five groups of glands or groups of tubules or lobes; the principal ones are the two lateral ones and the middle one, and some textbooks in describing them only describe three, but in some textbooks they are described as five, an anterior and posterior, and this structure, the prostate gland, is a little structure very much like a sponge. It has a large number of little cavities in it and the secretion of the prostate is manufactured in the prostate gland.

Q.—Now, will you tell us just where the prostate gland is located in the body with reference to the seminal vesicles? *A.*—The prostate gland lies just in front of the seminal vesicles and it surrounds the beginning of the urethra and at the base of the bladder, and it lies just in front of the rectum.

Q.—Tell us what the urethra is. *A.*—A channel through which the urine runs after it leaves the bladder.

Q.—And it is that same channel through which the sperm leaves the body? *A.*—It is.

Q.—The sperm never passed from the seminal vesicles into the prostate direct? *A.*—No, sir.

Q.—Well, what is the function of the prostate gland, then? *A.*—The prostate gland is largely the sexual center. It is a very richly supplied gland with nerve endings, and it has one of the principal roles in the sexual function. In addition to that the secretion of the prostate gland has the power. When it comes in contact with the sperms, the sperms are little cells very much like a wiggletail, they are quiet, they have no motion as long as they are in the testis or in the seminal vesicle or in the vas, but in sexual intercourse the secretion from the prostate mixes with the sperm from the seminal vesicles and the secretion of the prostate has the power to activate or motivate or make them so they move around. They become very active; and that is one of the functions of the prostate gland.

Q.—Now, Doctor, I will ask you what, if anything, is the actual effect on a human of transplanting this goat gland in the manner that has been described? *A.*—I don't think it would have any effect at all.

Q.—Well, by that you mean it would have no functional effect? *A.*—No.

Q.—What would happen to it? *A.*—I think it would die.

Q.—What happens when it dies? *A.*—It either is sloughed out immediately, or rather soon after the operation, or if it doesn't do that then it becomes filled with scar tissue, fibrous tissue, and simply becomes a scar in the testis.

Q.—When it becomes a scar, would that be a hard substance or a soft, or what? *A.*—Scar tissue is always more or less firm or hard.

Q.—In other words, it would just leave a little bump there? *A.*—That is right.

Q.—Now, this transplanting of the goat gland, whether accompanied by any other surgical or medical technic or not, would the mere transplanting of that goat gland have any effect, in your opinion, upon an enlarged prostate? *A.*—Not a particle.

Q.—Would it have any effect whatsoever upon reducing high blood pressure? *A.*—None at all.

Q.—Would it have any effect on treatment, or in treating hardening of the arteries? *A.*—It would not.

Q.—Would it have any effect in creating energy in a man? *A.*—No, I don't think so.

Q.—Or in curing epilepsy? *A.*—No.

Q.—Locomotor ataxia? *A.*—No, sir.

Q.—Neurasthenia? *A.*—No, sir.

Q.—The insanity of the type known as dementia praecox? *A.*—No.

Q.—Diseases of the stomach? *A.*—No.

Q.—Bowels or kidneys? *A.*—No, sir.

Q.—Well, would it have any effect in relieving constipation? *A.*—None at all.

Q.—Would it have any effect in curing sterility caused by mumps? *A.*—None at all.

Q.—As a matter of fact, Doctor, can sterility caused by mumps be cured in any manner? *A.*—No.

Q.—Why is that? *A.*—Because of the fact in mumps the involvement of the testis or testicle is what it is, it is an involvement of the testicle itself. It is an inflammatory process that results in the destruction of the testis and it is never regenerated.

Q.—Now, Doctor, how many types do you urologists recognize of prostatic trouble? How do you classify prostatic disorders? *A.*—Well, the infections.

Q.—What do you call that? *A.*—Is one.

Q.—What is that? *A.*—That is prostatitis. Enlargement of the prostate, we speak of it medically as hyperplasia or enlargement, as it becomes grossly overgrown and obstructs into the channel through which the urine passes, and in about 20 per cent of the cases of enlargement of the prostate the change is a cancerous change. In other words, carcinoma occurs in about one out of five.

Q.—Doctor, you speak of the large prostate closing the channel through which the urine passes. How does that happen, just what does it do? *A.*—What does the prostate do?

Q.—Yes, to close that channel? *A.*—Well, the prostate surrounds the neck of the bladder or beginning of the channel, the beginning of the urethra, and just like a horse collar does a horse's neck, and if you can imagine that you suddenly enlarge the horse collar four or five times, you can see the pressure on the horse's neck, it might choke him, and that same thing happens in the urethra, the urethra simply becomes choked off so the urine has difficulty in getting through.

Q.—Now, Doctor, with regard to these little ducts, little tubes you call them, the efferent ducts between the testicle and the epididymis, that lies right on it, say like a finger, as you say? *A.*—Yes, sir.

Q.—How large are those little ducts? *A.*—They are very small.

Q.—Well, can you give us any more definite idea? *A.*—Well, they are almost microscopic in size. You can't see them hardly at all. You can feel them, that is, the individual ones.

Q.—And assume that there are somewhere between twelve and twenty of those, in how confined a space are they located? *A.*—In a manner I should say about a quarter of an inch square.

Q.—Now, Doctor, what does palpate mean? *A.*—Feel.

Q.—Is it physiologically—I will change that. Is it possible for you in drawing the testicle out of the enclosure that it is in, the scrotum, to then feel those little ducts between the testicle and the epididymis? *A.*—Not at all, you couldn't feel them at all to save your life.

Q.—Is it possible, in your opinion, to select out any one of those little ducts and tie it off with a piece of linen thread? *A.*—It could not be done.

Q.—Now, Doctor, I will ask you, assume that it could be done and assume that a man was stated to have prostatic enlargement, who was treated in the following manner: that a part or all of these little tubes, say half of them, were tied off with linen thread, and that a portion of this other tube leading from there, the larger tube you have described as the vas deferens, may or may not have been taken out and cut away, and assume that the vas deferens is injected with a 2 per cent mercurochrome

solution, and assume that after that operative treatment there is a follow-up postoperative treatment during which approximately six ampules containing 20 cc. of a solution composed of one thousand parts of water to one part of hydrochloric acid and a small amount of blue coloring matter were injected into a man's veins, that covering a period of several days, have you an opinion as to whether or not that procedure might or could in any way affect prostatic enlargement? *A.*—I do have an opinion.

Q.—What is your opinion? *A.*—I don't think it could.

Q.—Will you tell us why? *A.*—Well, that is a pretty big order to tell you why. In the first place, the prostatic hypertrophy does not depend in any way on any change in the testicle itself or in the vas deferens. It is an intrinsic thing, that is, a thing that is inherent in the prostate itself, and I don't think anything that would be done to the testicle or vas would in any way affect the size of the prostate, and I do not think that the solution which you have described could by any remote stretch of your imagination have any effect on it whatever.

Q.—All right. Now, Doctor, have you an opinion—or what would be your opinion as to whether that procedure we have described, we will call it a surgical technic, could have any difference at all, or have any effect at all upon blood pressure? *A.*—None at all, I think.

Q.—Any effect at all upon hardening of the arteries? *A.*—None at all.

Q.—Or upon sexual rejuvenation; improving sexual power? *A.*—None at all.

Q.—Have you ever seen a patient on whom part or all of this procedure had been done? *A.*—Yes, sir.

Q.—And what part of the procedure was done, or was it all done? *A.*—I have seen some patients in whom I was told that they had the compound operation. Now, if that is what—if the questions you have asked me constituted the compound operation, then that is what they have had.

Q.—Well, have you ever seen a patient actually have any part of this operation done? *A.*—Yes. You mean see them have it done?

Q.—Yes. *A.*—No.

Q.—Not even part of it? *A.*—No.

Q.—Did you see those patients before the technic was done? *A.*—I saw some of them before, yes.

Q.—Then did you examine them after it was done? *A.*—I did.

Mr. Morriss Jr.:—We are going to make an objection to anything along this line, because there is no proof at all that they had received the operation from Dr. Brinkley.

Mr. Reynolds:—I withdraw the line of questioning.

THE COURT:—He withdraws the question.

Mr. Morriss Jr.:—We ask all questions with reference to that matter and what questions have gone in be excluded. I don't think he has given any testimony. He said he saw some; he hasn't given any testimony about it.

Q.—All right. Now, Doctor, will you tell us what is the meaning of the word isotonic? *A.*—Isotonic is a chemical term used to represent a solution which is as nearly as possible the same specific gravity and the same structure as the blood stream.

Q.—Now, Doctor, this solution that I have described to you before, a thousand parts of distilled water to one part of hydrochloric acid, with a little blue coloring in it, is that what is known as an isotonic solution? *A.*—No.

Q.—What is it known as? *A.*—I don't know just what you would call it.

Q.—Is it hypo? *A.*—What?

Q.—Is it hypo? *A.*—It is hypotonic.

Q.—What does that mean? *A.*—Below the specific gravity of blood.

Q.—In every day language does that mean weaker? *A.*—Yes, sir.

Q.—Now, then, Doctor, in your opinion what would be the effect of injecting that kind of solution into a man's veins? *A.*—I don't think it would have any effect if it was carefully injected and sterile.

Q.—Would it have any functional effect at all? *A.*—I don't think so.

Q.—Would it have any more effect than distilled water itself? *A.*—I doubt it; I doubt if it would at all.

Q.—Well, is there any reservation on that? *A.*—I don't think it would.

Q.—If there is we want to know. *A.*—No, I don't think it would.

Q.—Is there any point in injecting distilled water into the blood stream or into the veins? *A.*—Not that I know of.

Q.—Is there any point in injecting large amounts of distilled water? *A.*—Well, in surgical practice we frequently inject large quantities, large quantities of that, of an isotonic solution of salt or a glucose solution, that is a recognized—

Q.—I was asking, Doctor, about the distilled water. *A.*—Oh, no; distilled water is considered a bad thing to inject by itself into the blood stream, for the reason that because of the fact that it is a weaker solution it tends to absorb out of the blood cells certain substances which are necessary for their proper functioning, and therefore the distilled water is considered not only not a beneficial but an actively harmful thing.

Q.—Well, now, Doctor, in connection with your general knowledge, not especially confined to the field of urinology, you understand the affliction commonly known of as rickets, do you? *A.*—I do.

Q.—What would you say as to advice to a patient that thyroid extract be used for rickets? *A.*—For rickets?

Q.—Yes. *A.*—There would be no basis for that.

Q.—Well, would there be any good or bad effect, or just purposeless, or what? *A.*—Well, it might be purposeless. On the other hand it might be quite harmful if the patient to whom the thyroid was given was receiving a sufficient supply of thyroid substance from his own gland, then the administration of an excess or an additional amount of thyroid might be definitely harmful.

Q.—Would, in your opinion, would it be good advice to advise a patient to do that without the control and administration of that substance by a physician? *A.*—Thyroid should never be given without a preliminary estimation of the basal metabolism rate, that is, the rate to determine how rapidly the varying functions are going on in the body, which is a qualitative—I mean quantitative—estimate of the amount of thyroid going into the blood stream. If that is low it is given, and if it is not low no thyroid should be given. No thyroid should be given before having that test.

Q.—Would you say a qualified and reputable physician would advise a person to take thyroid extract without designating how, when or where, after merely having been told that a person has rickets, without performing the tests? *A.*—I don't quite get your question.

Q.—Would you say that it is the general custom and practice among qualified and reputable members of the medical profession, after merely having been told by a patient whom he had never seen, that the patient had rickets, that he would then advise the use of some thyroid extract, without indicating how, when, what or under what conditions? *A.*—No, not at all.

Q.—Doctor, do you know Dr. Brinkley's general reputation in the medical profession? *A.*—I do.

Q.—What is that reputation?

Mr. Morriss Jr.:—Now, just a moment. We object to that as not being competent to establish any issue in the case, being improper, irrelevant, immaterial, and not the proper predicate, and not confined to the question; the reputation of any man is the general reputation in the community where he resides and his reputation not among any given body of men or anything of that sort, and we object for the reasons stated.

THE COURT:—Overrule the objection.

Mr. Morriss Jr.:—Note the exception.

Q.—What is his general reputation among medical men? *A.*—He has a reputation of being a quack.

Q.—What do you mean by that? *A.*—We mean by that a man who practices medicine without regard to the standards, traditional ethical practices and customs of the profession.

Q.—Now, would you say that means merely because he advertises, is that it? *A.*—That is one of the things.

Q.—Is that the only one? *A.*—No.

Q.—What else? *A.*—Because of the fact we think—

Mr. Morriss Jr.:—Just a minute. We object to the testimony because it would call for a conclusion and opinion of the witness, and is not a proper subject of inquiry, not a matter of general reputation.

THE COURT:—This is a case where the man puts his reputation in issue here and says it has been damaged. They have a right to inquire into what his reputation is. Not only inquire as to what it is among doctors, but you can inquire as to what it is among people generally. Overrule the objection.

Q.—Will you answer the question?

Mr. Morriss Jr.:—It isn't a question of his reputation—

THE COURT:—I heard you once on it, counsel. If you want to change the time to what is his reputation in 1938, when the article was published, then I would sustain it to that extent.

Mr. Morriss Jr.:—Note the exception.

Q.—Well, confine the question to prior to February 1938.

THE COURT:—All right.

Q.—Was the advertising that he does the only feature that entered into your statement?

THE COURT:—Let's get that date straightened out as to the reputation before the publication of the article.

Q.—Was he considered by—strike that. Was his general reputation among medical men prior to February 1939 that of a quack? *A.*—It was.

Mr. Morriss Jr.:—Just a moment. We object to that as not being confined to the proper time nor the proper place.

THE COURT:—Overrule the objection.

Mr. Morriss Jr.:—And it calls for a question which is not properly—

THE COURT:—All right. I overrule the objection.

Mr. Morriss Jr.:—Note the exception.

Q.—Answer the question. *A.*—It was that.

Q.—I will ask you that same question and say in February 1938? *A.*—It was.

Q.—Now, Doctor, will you state what we were trying to get at there, whether or not the advertising is the only thing that entered into that, if you know? *A.*—No, it was not. It was the fact that he was advertising to do a procedure for the relief of a certain condition which everybody who knew anything about the prostatic enlargement knew could have no effect whatever on the condition.

Mr. Morriss Jr.:—Now, we move that that statement be excluded as stating a matter of medical opinion as a matter of his knowledge, and that the question is a conclusion and an improper one and one that he is not qualified to draw and one of course that could only be expressed as a mere matter of opinion.

THE COURT:—Overrule the objection.

Q.—Now, doctor, if I had asked you the same questions regarding his reputation among genital-urinologists, we will say, would your answer be any different? *A.*—No.

Mr. Morriss Jr.:—Just a moment. We make the same objection to that. It is not general reputation. For instance, if the court please, there are many authorities which hold that you may not inquire as to what his reputation is among a part of the community, but it is his general reputation and not his reputation among any particular set and we object for the reasons stated.

THE COURT:—Overrule the objection.

Mr. Morriss Jr.:—Note the exception.

Q.—Doctor, I will ask you whether or not Dr. Brinkley, either generally in the medical profession or among urinologists, had the reputation of being a specialist in prostate treatments? *A.*—He did not.

Q.—I will ask you whether or not—

Mr. Morriss Sr.:—Of course, we make the same objection to all this, your honor.

Mr. Morriss Jr.:—Is it understood our objection goes to all this in these various forms of questions?

THE COURT:—I don't know, counsel.

Mr. Morriss Jr.:—Well, we do object to the question that has been stated.

THE COURT:—Overrule the objection.

Mr. Morriss Jr.:—Note the exception.

Q.—Do you know whether or not Dr. Brinkley had any standing in the circles made up of urinologists? *A.*—He did not.

Mr. Morriss Jr.:—Now, just a moment. Don't answer the question, please, sir, until we have an opportunity to object; and we object to that as not any proper—not founded on his general reputation, that the proper predicate has not been laid as to whether he knows his general reputation, and it is merely a conclusion and opinion of the witness.

THE COURT:—Well, counsel, it is necessarily pertinent evidence what doctors generally think of other doctors, if they were in a position to find out about it and know. It would be pertinent to find out what a lawyer was generally thought of by other lawyers or judges, or how architects were regarded by other architects. They are people who are in a better position to know about them than anybody else, and one of the component elements of Dr. Brinkley's damages, if he has been damaged here, would be the lowering of his standing in the opinion of his fellow doctors. If it happens he had no standing in the opinion of his fellow doctors, it follows naturally he hasn't been damaged. So I think the evidence is pertinent and admissible.

Mr. Morriss Sr.:—I want to call attention to the fact that no such allegation as that is made in the petition itself. It is the standing generally.

THE COURT:—Doctors are part of the general public. Doctors refer work to one another, and it is a very valuable asset to a doctor to stand well with other doctors, so I think that is one of the elements that can be considered. I would let him inquire as to his standing with the public generally and I don't think the public generally is in as good a

position to pass on his qualifications as a doctor, but after all it is a question whether his reputation has been injured generally. Overrule the objection.

Mr. Morriss Jr.:—Note the exception.

Q.—Doctor, do you know whether or not Dr. Brinkley had any standing—and the time is February 1938 or prior thereto—as a genital-urinary surgeon?

Mr. Morriss Jr.:—Is it understood those objections go to that?

THE COURT:—Yes.

The Witness:—Shall I answer.

THE COURT:—Go ahead, Doctor, answer the question. *A.*—He did not.

Q.—I ask you, Doctor, whether or not either in the medical profession generally or in the circles of urinologists and genital-urinary surgeons, Dr. Brinkley on that date or before or after at any time had or has the reputation as being the greatest prostatic specialist in the world?

Mr. Morriss Jr.:—Now, just a moment. We object to that as not being confined to the proper time. The question is duplicitous, asks with reference to several groups, asks with reference to several different times, and it is not confined to the place of residence, and not a competent manner to prove reputation by a question of his standing, but it calls for a conclusion and opinion of the witness, and is irrelevant and immaterial, and no predicate has been laid as to his knowledge.

THE COURT:—I think there is some claim made in that book that he published and gave away that he is the greatest prostate surgeon in the world, is that what it is?

Mr. Reynolds:—Your honor, the reason I asked it at the present time, the evidence yesterday showed night before last he broadcast over the radio a contest for people to write in—it was right here on the stand—they were to write a contest on that phase.

THE COURT:—Overrule the objection.

Mr. Morris Jr.:—Note the exception.

Q.—Do you remember the question, Doctor? *A.*—He did not.

The cross examination followed:

CROSS EXAMINATION

Questions by Mr. Morriss Sr.:

Q.—Doctor, you say you are a member of the American Medical Association? *A.*—I am.

Q.—For how long? *A.*—Oh, I have been a member since 1909.

Q.—Did you know when Dr. Brinkley was a member of the American Medical Association, or for how long? *A.*—No.

Mr. Reynolds:—I object to the form of that question. They are assuming he has been a member. There is no proof of that.

THE COURT:—Dr. Brinkley testified he had been a member and was put out when he started to advertising.

Mr. Reynolds:—We withdraw the objection.

Q.—Did you know him when he was a member of the American Medical Association? *A.*—I did not.

Q.—Did you know if he had been? *A.*—I did not.

Q.—Or for how long? *A.*—I did not.

Q.—You didn't know that? *A.*—No, sir.

Q.—In other words, Doctor, the profession, the American Medical Association, those members of the profession who are members of that association decry advertising, don't they? *A.*—Well, every reputable—

Q.—I am just asking you that question. Answer yes or no. *A.*—No.

Q.—They don't decry— *A.*—I misunderstood your question.

Q.—I say they decry advertising by a doctor? *A.*—Yes, sir.

Q.—And you don't know whether it was by reason of Doctor's advertising that he either withdrew or was expelled by the American Medical Association or not, you don't know anything about that, do you? *A.*—No, sir.

Q.—Now, Doctor, personally have you performed this operation, the technic of which you spoke about? *A.*—I have not.

Q.—You have never performed it? *A.*—No, sir.

Q.—Have you ever been present at the performance of that operation? *A.*—No, sir.

Q.—You have not? *A.*—(No answer)

Q.—You have no experience in that operation? *A.*—Not in the operation that he described.

Q.—Yes, sir. That is either of their operations, I mean, the last operation he spoke of, nor of the human—or the human or animal gland operation? You never had any experience with either of those, did you? *A.*—I have done some experimental work in the transplantation of glands.

Q.—Was that human or animal glands? *A.*—With dogs.

Q.—Animal? *A.*—Yes, sir.

Q.—You were never present and saw Dr. Brinkley's operation, of either sort, were you? *A.*—No, sir.

Q.—You have never seen nor known personally, had any personal contact or observation of the operation he has performed now for the past number of years on patients? *A.*—I have never seen him or his assistants do this operation, no, sir.

Q.—The prostate gland operation, which I would call a minor operation, in other words, not the urethral, but the one where counsel have attempted to describe to you the ligating of the tubes and so forth, you never—you have never seen that operation performed by anybody? *A.*—No, not for this thing, no.

Q.—Now, Doctor, there are several stages of the enlargement of the prostate gland, are there not? *A.*—Oh, we—

Q.—You speak of it in three stages? *A.*—Three or four. It is variously estimated at three or four.

Q.—That generally happens at what age in men? *A.*—It generally begins to happen in the fifties and gradually increases in the sixties and seventies, maybe.

Q.—Sometimes it happens earlier? *A.*—Sometimes it happens earlier, yes, sir.

Q.—Now, that enlargement, when it gets to what you call the third stage, is likely to entirely cut off the flow of the urine? *A.*—The size of the gland apparently doesn't have anything to do with the actual obstruction. Sometimes small glands cause much more obstruction.

Q.—Depending on what gland grows? *A.*—No, sir.

Q.—It has to choke the neck of the bladder, doesn't it? *A.*—It has to produce some result which we do not actually and entirely know about.

Q.—This gland ordinarily and normally in a human being is about how long? *A.*—About the size of an English walnut.

Q.—An English walnut may be large or small? *A.*—It is about 5 cm. across and about 4 cm. deep and about 3 cm. thick.

Q.—Give it to us in inches. *A.*—An inch and a quarter or an inch and a half across.

Q.—I asked you that— *A.*—About that.

Q.—That is the question I asked you first. *A.*—Now, the enlargement, as it becomes diseased or disordered, it becomes larger until it sometimes gets to what size, maximum? *A.*—Oh, I have seen them sometimes where they are larger than a big grapefruit.

Q.—Well, would you say four inches? *A.*—Four or five or six inches. I have seen them that much across.

Q.—When they get enlarged and diseased that way what is the effect upon the urinary power? *A.*—The first effect is obstruction to the passage of the urine from the bladder.

Q.—What effect does that have in reference to pain and bother, trouble with the patient? *A.*—Sometimes it doesn't give them any discomfort or pain at all.

Q.—Well, as it progresses and gets bad or diseased what are the symptoms of pain they suffer, if you know? *A.*—The symptoms of pain?

Q.—Yes. *A.*—I don't know what you mean by that. Pain is a symptom.

Q.—What are the symptoms that are expressed that cause pain, what are the symptoms of the trouble or disease that causes the pain? *A.*—Pain is a symptom. Your question, I don't know how to answer it.

Q.—What causes the pain, can you understand that? *A.*—Yes, sir.

Q.—Tell us then. *A.*—Because they can't pass their water.

Q.—Is that the only reason? *A.*—The principal reason, yes, sir.

Q.—Is it the mere cutting off of the water, is that the only cause of the pain? *A.*—That is the principal reason.

Q.—Well, what others are there? *A.*—Infections sometimes, sometimes stones form behind the prostate, sometimes cancer, and there is metastasis, that is the cancer going outside the prostate and into the bone of the spine. That produces pain. There are many causes of pain in the prostate.

Q.—Now, ordinarily one of the operations is the urethral operation, isn't it, the transurethral? *A.*—That is one. That is the most recent advance.

Q.—By that you mean that is just a reaming process up there, you ream out that gland, isn't that right? *A.*—You go in and actually do a removal of all of the gland.

Q.—The whole gland? *A.*—Yes, sir.

Q.—Well, you mean in the transurethral? *A.*—Yes, sir.

Q.—You don't ream it out and remove part of it? *A.*—We remove all of it, practically all.

Q.—Is it commonly done and called the reaming out process? *A.*—I guess that is what you mean by the prostatic resection.

Q.—And now do you mean that in every instance of the reaming out process they remove the entire gland? *A.*—We try to.

Q.—You try to? *A.*—Yes, sir.

Q.—Well, would you say you did? *A.*—Well, we practically succeed.

Q.—What is the other method? *A.*—The two older methods of removing the prostate gland, one was what was known as the suprapubic, where the incision is made in the lower part of the abdomen and the bladder is opened and the gland removed through the abdominal wall. The other is one in which an incision is made just in front of the rectum; a section is made through to the prostate and the prostate is removed through that direction.

Q.—Well, both of those contemplate the removal completely of the gland? *A.*—Of the gland, yes, sir.

Q.—Those both contemplate the complete removal of the gland? *A.*—In neither one is there ever a complete removal of the gland. There is a portion of compressed gland tissue that is always left, no matter whether you use the suprapubic or the perineal, where the incision is made just in front of the rectum.

Q.—It is what you commonly call the removal of the gland? *A.*—Yes.

Q.—What are the effects that are likely to flow, what are found to be the effects that commonly flowed from that which you tried to relieve by the transurethral method? *A.*—What effect?

Q.—Yes, what was the bad effect on the patient of that old process of removing the gland? *A.*—The bad effect?

Q.—Yes. *A.*—As a rule the results were good. They were removed of their obstruction and able to urinate.

Q.—Could they control it? *A.*—Yes.

Q.—Just the same, as well? *A.*—Yes, sir.

Q.—You mean that in the older days, back we will say a decade or more ago where that was about the only method used, was it not? *A.*—Those two methods.

Q.—All right. In many, many instances it was found that it did have a very bad effect in the way of shortening the life of the patient, didn't it? Would you admit that? *A.*—Well, I don't know how to answer your question other than to say this, that in the early days of the operation, of course, the mortality rate in prostatic surgery, whether perineal or suprapubic, was rather high, but in the last twenty-five years that has been reduced to around 4 to 6 per cent, so the good results in those cases, whether done one way or another, amounted to 94 to 96 per cent cure.

Q.—How long do you say it has been, if you know, since the removal of the prostate gland became a practice? *A.*—Oh, thirty years.

Q.—In other words, it has only been within the last thirty years that they learned to do that? *A.*—To any great extent, yes, sir.

Q.—Before that do you know what they did? Did they know anything about the enlarged prostate gland? *A.*—Before the removal of the gland, as a matter of fact, a hundred years ago a man named Guthrie in England attempted to do what is now being done by the transurethral resection, and prior to that time a Frenchman attempted with another instrument to remove the obstruction through the urethra, and some time along in 1870 or 1880 Bottini, an Italian, attempted to remove the obstruction by a cautery; so the thing extends over a long period of time.

Q.—But you say the operation hasn't been being performed and removed over about thirty years? *A.*—Yes.

Q.—I am talking about among the American profession, what did they do before that for it? *A.*—They usually didn't do anything for it, or else they put a tube in the bladder above and let the urine drain out that way. The patients were allowed to continue to carry that tube the remainder of their lives.

Q.—Didn't they sometimes practice castration? *A.*—That has been used from time immemorial.

Q.—To try to relieve that trouble? *A.*—With no effect.

Q.—But they practiced that? *A.*—Many different efforts were made to do it.

Q.—Within the past slightly more than a decade the transurethral method has become into rather common use, hasn't it? *A.*—Yes.

Q.—And that is recognized as one of the methods, isn't it? *A.*—It is.

Q.—It is, of course, a rather severe surgical operation, isn't it? *A.*—No.

Q.—It is a surgical operation? *A.*—You said a severe one.

Q.—I am not speaking about mortal, but isn't it? Please answer, is it, Doctor. *A.*—It is not unpleasant. They have no pain whatever with it.

Q.—Well, you would say the same thing of any other abdominal operation, wouldn't you, of any abdominal operation? *A.*—No, I would not.

Q.—At any rate, if there is a way, if medical science and skill and research can find a way to lighten that operation it would be a great boon to humanity, wouldn't it, to perform an easier operation that would cause the patient less loss of time and less likelihood of danger and all that, it would be a boon to humanity, wouldn't it? *A.*—Yes, sir.

Q.—You don't deny that there are the elements of hemorrhage and infection and shock that are in the transurethral operation? *A.*—No, sir I do not.

Q.—You mean you say you don't deny it, or there is none? *A.*—We don't deny it

Q.—So of course if that alone could be avoided in an operation where the trouble has not progressed too far, that would be a great boon to suffering humanity, wouldn't it? *A.*—Yes, sir.

Q.—Now, Doctor, when did you first get into the matter of this case? When were you connected in any way with any investigation against Dr. Brinkley? *A.*—I haven't been connected with any investigation of Dr. Brinkley at all.

Q.—When were you connected with or talked to first with reference to this case? *A.*—Last Saturday.

Q.—Last Saturday? *A.*—Yes, sir.

Q.—In other words, Dr. Fishbein had not consulted or seen you with reference to the matter until just last Saturday? *A.*—He didn't see me then.

Q.—Well, somebody did for him? *A.*—If you want to know how—

Q.—Was it an investigator? *A.*—No.

Q.—By some doctor? *A.*—Yes, sir.

Q.—You mean a local doctor up there in your town? *A.*—No, sir.

Q.—By some one else? *A.*—Yes, sir.

Q.—And by— *A.*—If you want to know, it was by Dr. Holman Taylor of Fort Worth.

Q.—Is he also a member of the American Medical Association? *A.*—Yes, sir, he is.

Q.—Do you know anything about his connection in the past with any opposition to Dr. Brinkley? *A.*—I do not.

Q.—You don't know anything about that? *A.*—No.

Q.—And when did you come down here? *A.*—I came down yesterday morning.

Q.—From— *A.*—Dallas.

Q.—From Dallas, at the instance of the defendant? *A.*—Dr. Holman Taylor asked me to come down here as a witness in this case.

Q.—Well, did he do that at the instance of the defendant? *A.*—I don't know.

Q.—You don't know? *A.*—No, sir.

Q.—You don't know, in other words, whether it was at the instance of Dr. Fishbein or of the American Medical Association? *A.*—I do not. I don't know where the request originated.

Q.—Now, you say that you are a member of the American Medical Association. I want to ask you do you know whether in cases of this character the members are assessed for expense items or they pay or contribute? *A.*—I don't understand your question.

Q.—In suits against the American Medical Association or Dr. Fishbein, do you know whether the American Medical Association, or the members rather, are assessed something or charged something? *A.*—No, they are not.

Q.—Don't you know that—do you remember or did you know about the instance of the publication by Dr. Fishbein against Dr. Brinkley about ten years ago? *A.*—I don't recall it if I did.

Q.—You don't remember that Dr. Brinkley, then, published an article largely along the same line as this one?

Mr. Reynolds:—Dr. Fishbein.

Q.—Dr. Fishbein, I mean, published an article about Dr. Brinkley along the same line? *A.*—The one ten years ago I don't remember.

Q.—Did you know anything about this suit at that time? *A.*—Oh. I knew in a general way about it.

Q.—You knew there was a suit filed against him by Dr. Brinkley? *A.*—I have a hazy recollection of it. I don't remember any of the details.

Q.—You remember about the suit having been dismissed by Doctor when he moved off down here, don't you? *A.*—I don't remember.

Q.—Do you remember whether or not you paid at that time anything, made any contribution toward the expense of that suit on the part of the American Medical Association? *A.*—I did not. I have never been assessed any special assessment by the American Medical Association.

Q.—Do you know whether you were requested to? *A.*—No.

Q.—Were you at that time a member? *A.*—I was.

Q.—Do you know anything about whether or not all members or what members were asked to contribute at that time? *A.*—I don't think any of them were.

Q.—You just don't know about that, is that right? *A.*—I don't know.

Q.—And in this instance, of course, this Dr. Hood, you say it was? *A.*—Dr. Taylor, Holman Taylor.

Q.—Dr. Taylor having asked you to come, you volunteered to come, didn't you? *A.*—I did.

Q.—Paid your own expenses? *A.*—Yes.

Q.—And you weren't, of course, subpoenaed or under a legal process, but you came down here voluntarily to testify in this case for Dr. Fishbein, is that right? *A.*—Yes, sir.

Q.—I say at your own expense? *A.*—Yes, sir, I guess it is my own expense; so far it is.

Q.—Well, don't you know? *A.*—No, I do not.

Q.—Well, did you— *A.*—The matter has not been discussed with me by anybody.

Q.—Well, did you expect to get your expenses paid? *A.*—I don't expect anything out of it at all.

Q.—Have you ever talked to any of the patients in this region at all who have been treated or operated on by Dr. Brinkley? *A.*—Yes.

Q.—As to the effect of their operation? Here, that is here, any patient in this county or in any adjoining county, we will say, as to what their condition was and what it has been since Dr. Brinkley operated on them? *A.*—I don't think in this county. I have had numbers of them from other parts of the state.

Q.—Have you ever been to talk to anybody in this region? *A.*—This county?

Q.—This county or adjoining counties, this district? *A.*—I don't know how big this district is.

Q.—It takes in the adjoining counties. *A.*—Just simply the adjoining counties?

Q.—Yes. *A.*—The majority of my practice comes from the central and eastern and northern portions of the state. I don't think I have talked to anybody from here.

Q.—Have you ever been down here to Del Rio? *A.*—This is the first time I have ever been to Del Rio.

Q.—You weren't here during all the time that Dr. Brinkley had his hospital here? *A.*—No, I didn't come down.

Q.—You never saw Dr. Brinkley's hospital, either here or in Little Rock? *A.*—No.

THE COURT:—Counsel, if he has never been here before it necessarily follows he couldn't have seen it.

Mr. Morriss Sr.:—I said here or Little Rock.

THE COURT:—All right.

Q.—You have never talked to the various doctors who serve his hospital? *A.*—I have never seen one.

RE-DIRECT EXAMINATION

Questions by Mr. Reynolds:

Q.—Have you ever been assessed for anything by the American Medical Association? *A.*—No, sir.

Q.—To your knowledge, has there ever been an assessment for anything? *A.*—No, sir.

Q.—Any purpose at all? *A.*—No, sir.

Q.—Who is Dr. Holman Taylor, at whose request you say you came down here? *A.*—He is secretary of the Texas State Medical Association.

Q.—And when and where did you talk to him? *A.*—He called me over long distance telephone last Sunday—I mean last Saturday—and asked me if I would come down here yesterday, and I told him that I would look over my schedule and see if I could rearrange my work and see if I could, and I did, and I phoned him and told him I would.

Q.—Prior to the time you arrived here had you discussed Dr. Brinkley or the method of his operation with any one connected with this lawsuit, lawyers or otherwise? *A.*—You mean this immediate situation?

Q.—Yes. *A.*—No, sir.

Q.—Doctor, you say that you never performed this operation which was described to you regarding the cutting off of the small ducts between the testicle and the epididymis. Why not? *A.*—Well, I have never seen any indication or reason to. I have operated on many testicles and have removed the testicle or the epididymis entirely, or the vas deferens for tuberculosis of the epididymis, but this operation I have never done at all, this particular operation.

Q.—Have you ever done anything like this for the purpose of reducing the size of the prostate? *A.*—No, sir.

Q.—Is there the slightest indication, in your opinion, that this operation has anything to do with that sort of situation?

THE COURT:—I think that has been gone over.

Q.—Doctor, I would like to ask you if one of these patients that they have mentioned to you came to you and told you that as a result of that operation he told you he had been sexually improved, to what would you attribute that feeling on his part?

THE COURT:—I don't know how far you propose to go with that, but you may open up a field there that I don't think is proper. I don't think individual patients could be brought in here to testify to this and that and the other results.

Mr. Reynolds:—I withdraw that question and all others like it.

Mr. Morriss Sr.:—We expect to give counsel the benefit of that. We expect to produce many of these patients for the purpose of proving by circumstantial evidence the results obtained by the patient.

THE COURT:—I will hear you on that later.

RE-CROSS EXAMINATION

Questions by Mr. Morriss Sr.:

Q.—Doctor, could you before you leave, couldn't you detail to us the symptoms of prostatic trouble in the patient, what the symptoms are?

Mr. Reynolds:—Just a minute. May we ask counsel to confine that to some type of prostatic condition, because all of these various types, the Doctor could talk at great length on them.

THE COURT:—I haven't found the Doctor very verbose so far.

Q.—Can you give us what are all of the symptoms of prostatic trouble? *A.*—Prostatic enlargement?

Q.—Yes, trouble with the prostate. *A.*—There are many different kinds of trouble with the prostate.

Q.—That is what I want you to do, give us the symptoms of any disease or trouble with the prostate. That is, the symptoms the patient feels. *A.*—Am I at liberty to choose the type of trouble I describe?

Q.—I want you to, as briefly as you can— *A.*—The symptoms of all the prostatic diseases?

Q.—All the symptoms that the patient feels in diseases of the prostate. *A.*—You are going to be here a long time if you are going to give me that.

Mr. Reynolds:—Your honor, that is the point of my objection. If he wants to confine it to prostate enlargement, prostatitis or cancer, that is all right, but the subject he asks covers whole books.

Mr. Morriss Sr.:—We don't want it confined.

THE COURT:—What is the purpose of it?

Mr. Morriss Sr.:—We need to know what this doctor claims are the symptoms of prostatic trouble. It is, of course, a matter of proof. First, it is quite material if one comes here and says, "I have certain—I feel certain symptoms," and if that man then shows the symptoms which are this particular trouble, if this operation is performed and if afterward all those symptoms are relieved through a long period, of course, those are circumstances of a sort to see whether or not he has—whether or not that operation has helped him.

THE COURT:—It seems to me that if that is admissible it is affirmative proof and not admissible on cross examination. They didn't ask him anything about that.

At this time the court and counsel conferred.

THE COURT:—All right.

Q.—All right, state briefly some of the symptoms, how he suffered? *A.*—Enlargement of the prostate, one of the earliest symptoms, is the fact the patient notices he has to get up at night more often than formerly to urinate, two, three, four, five times. That gradually increases, and he begins to notice he has a loss of force to his stream, he doesn't urinate as freely and forcefully as he did. He begins to notice he has some discomfort on urinating, and at the end of urinating, and then quite a lot of discomfort, and sometimes the pain will be almost unbearable, and they have to be relieved one way or another. Those are in brief the main symptoms of enlarged prostate.

Q.—Is that where the abdomen—in the region of the abdomen? *A.*—Yes, the bladder and lower part of the abdomen.

Q.—You spoke of—that is the hypertrophy or enlargement? *A.*—That is right.

Q.—Now, then, give us the symptoms of the prostatitis. A.—That is a much more difficult thing to do. Sometimes it is a vague discomfort in the perineum, or what is commonly known as the crotch, in front of the rectum, between the rectum and the scrotum, a discomfort, discomfort in the groins, low down here and the inner side of the thigh, backaches of various kinds, frequency of urination and painful urination and various types of things like that.

Q.—And, Doctor, those—of course, that condition after some duration or progress may cause a general involvement of the system so far as the strength is concerned? A.—When you get into that you get into a tremendous field. I would be glad to go into it—

Q.—I am just asking you. A.—Sure, the patient then is a sick individual. he becomes uremic, the urine backs up into his kidneys—

Q.—I was trying to ask you, it involves a general condition of the patient's health? A.—Yes, sir.

Q.—Weaker? A.—Yes, sir.

Q.—Unable to do his work as usual? A.—Yes, sir.

Q.—And such as that? A.—Yes, sir.

RE-DIRECT EXAMINATION

Questions by Mr. Reynolds:

Q.—This last statement made by Mr. Morriss involving the general health, weakness, inability to do work, isn't it a fact that there are many, many physical conditions to which you would give the same answer that have nothing to do with the prostate? A.—Surely.

Q.—And you wouldn't diagnose prostatic enlargement on the brief explanation of symptoms which you just told about, would you? A.—No.

Q.—There are many, many other things that you have to consider, that have to be confined with it? A.—Yes, sir.

Q.—And you wouldn't diagnose prostatitis from the brief description you gave of it? A.—No.

Q.—There are many, many other things besides that? A.—Yes.

Q.—Tell us some other things that might cause—other than prostatic condition—that might cause the urinary trouble? A.—Tumor of the bladder can cause it, diverticulum of the bladder. That is a pouch off from the bladder wall which holds a large amount of urine ordinarily. Inflammation of the bladder, ulceration of the bladder, and tuberculosis of the kidney, a stone in the urethra, which is the tube that runs from the kidney to the bladder.

Q.—That is sufficient. In connection with these other conditions, a patient might have a backache? A.—He might have all of the symptoms we have described except just the difficulty.

Q.—I would like to know if prostatic enlargement could be connected with or cause in any way epilepsy? A.—I don't think so.

Q.—Dementia praecox? A.—No.

Q.—Hardening of the arteries? A.—No.

RE-CROSS EXAMINATION

Questions by Mr. Morriss Sr.:

Q.—If you have those different symptoms you speak of that might be caused by different conditions, correct and efficient clinical examination, pathology, would disclose whether it is—and, of course, a physical examination would disclose to the experienced surgeon or physician whether he had the prostatic trouble, wouldn't it? A.—Yes, sir.

Witness excused.

TESTIMONY OF DR. BENJAMIN WEEMS TURNER

Dr. Benjamin Weems Turner stated that he had graduated in medicine, that he had served an internship, that he had done postgraduate study and that he is a member of various special societies.

The testimony then proceeded:

Q.—Now, Doctor, you know of John R. Brinkley, the plaintiff in this case, do you? A.—Yes, sir.

Q.—And for how long would you say you have known of him? A.—Well, since the World War, I would say about 1918 or 1919.

Q.—Well, now, Doctor, during the time that you have known of him have you ever known him to be a member of any of these organizations you have mentioned to which you belong? A.—No.

Q.—Did you know Dr. Brinkley—did you know of Dr. Brinkley having advertised himself for some time as a goat gland specialist? A.—Yes, sir.

Mr. Morriss Sr.:—Of course, your honor, the same objection is made to that as to the other witness.

THE COURT:—Yes. Overrule the objection.

Q.—Now, Doctor, we would like to know your opinion as to whether or not it is physiologically possible to transplant the gland of a goat, the testis of a goat into the testicle of a man by making a pocket in which it is inserted, or in any manner, and have it still live? A.—I would say it is not.

Q.—Why not, Doctor? A.—Because there would be no way for nature to anastomose the blood and nerve supply.

Q.—Now, Doctor, as I understood your answer, it was impossible to anastomose. What does that mean? A.—Well, for nature to grow together the ends of the vessels and nerves.

Q.—That is what you meant by that? A.—By anastomosis, yes, sir.

Q.—Why would you say that is impossible? A.—Well, for the first reason, that there is no evidence of any of us—no evidence of such ever having been done.

Q.—Well, suppose we forget that there is no evidence that it has never been done and say from a scientific and medical standpoint just why, or why it wouldn't be possible? A.—Well, the minute vessels that supply this tissue, upon removal, are severed and there is no way to unite them. Therefore the tissue would die.

Q.—Well, now, assume that inserting this goat gland into the human gland—an incision is made, from which human blood spurts or comes, anyway, into contact with the goat testicle. Would or would not that fact keep the goat testicle alive for any time? A.—It would not.

Q.—Further assume, Doctor, that there was some possible method of providing a blood supply; is there any method of providing a nerve supply? A.—No.

Q.—Well, would the goat gland live in the absence of nerve supply? A.—Well, it is possible, I would say.

Q.—Would it have any functional activity? A.—No.

Q.—Now, Doctor, I guess you have answered that there has never been any recorded successful transplantation of any gland of any kind, is that right? A.—Yes, sir.

Q.—In your opinion, would the transplantation, as we have been talking about here, have any effect, any functional effect whatsoever? A.—It would not.

Q.—Would it have any effect at all upon an enlarged prostate? A.—No.

Q.—Upon prostatic or other types of cancer? A.—It would not.

Q.—Upon sexual rejuvenation? A.—It would not.

Q.—Would it have any effect in treating or curing the type of insanity known as dementia praecox? A.—No.

Q.—High blood pressure? A.—No.

Q.—Hardening of the arteries? A.—No.

Q.—Create energy in a man? A.—No.

Q.—Would the treatment in any way help or cure epilepsy? A.—No.

Q.—Locomotor ataxia? A.—No.

Q.—Neurasthenia? A.—No.

Q.—Diseases of the stomach, bowels or kidneys? A.—No.

Q.—Constipation? A.—No.

Q.—Would it have any effect at all in attempting to cure sterility caused by mumps? A.—No.

Q.—Can sterility caused by mumps be cured? A.—It cannot.

Q.—Why not? A.—Because the active function of the organ is destroyed by a sclerosis or fibrous tissue.

Q.—Now, Doctor, as a result of your questions, what then would you say would happen to this goat gland? A.—I would say it would die and form a foreign body of scar tissue and would probably incapsulate by nature's healing effort.

Q.—Just leave a hard bump? A.—That is all.

Q.—Is there any process of nature that would lead you to an opinion as to whether that would finally disappear? A.—I would think the larger portion would. There would be a certain amount of scar that would remain.

Q.—Now, Doctor, as I understand it, in between this space, between the testicle and the epididymis, there is contained some twelve to twenty minute tubes that we call efferent ducts, is that correct? A.—Yes, sir.

Q.—How long are those, generally? A.—Well, they are quite small, they are barely visible, barely detected by the eye.

Q.—Can you feel them with your fingers? A.—No.

Q.—Would it be humanly possible to separate one of those out and tie a piece of linen thread around it? A.—No.

Q.—Now, I will ask you if tying off all or part of those has ever been—ever been used by you as part of the treatment for prostatic enlargement? A.—No.

Q.—Or by any other man, that is, a urinologist, if you know?

Mr. Morriss Sr.:—Just a minute.

THE COURT:—By any one he knows, he asked.

A.—Not to my knowledge.

Q.—Now, then, Doctor, assume an operation upon an individual who is said to have prostatic enlargement wherein approximately half of these efferent ducts are tied off, wherein a section of the vas deferens, the tube leading from the epididymis up into the seminal vesicles, may or may not be cut out and removed out, and assume that a 2 per cent mercurochrome solution is injected into the vas deferens, that after this operation has been completed, of course, assume that all incisions made are then fixed back together again, sewed up, and postoperative treatment consisting of the intravenous injection of approximately six ampules containing 20 cc. each of a substance composed of 1,000 parts of distilled water to one part of hydrochloric acid and also containing a minute amount of blue coloring matter, and that this material is injected into the veins over a period of several days; have you an opinion, based upon reasonable medical and surgical certainty, as to whether or not that technic might or could have any effect in relieving prostatic enlargement? A.—I would say it would not.

Q.—Would there be any purpose in your mind to such an operation, medically and scientifically? A.—Not to my knowledge.

Q.—Now, Doctor, would that operation in your opinion have any effect on restoring sexual vitality? A.—Not to my knowledge.

Q.—In your opinion? A.—No, no.

Q.—And would it have any effect in reducing high blood pressure? A.—No.

Q.—Hardening of the arteries? A.—No.

Q.—Would it tend to create energy in men? A.—No.

Q.—Would it have any effect, in your opinion, on any of these various diseases I named over before? A.—No.

Q.—All right, Doctor, now, would you say that that method was—strike that. Doctor, this solution about which I spoke, a thousand parts of distilled to one part of hydrochloric acid and also a minute amount of blue coloring in that, is that type of solution considered an isotonic solution? A.—That is hypotonic.

Q.—Which means what? A.—It means less than the concentration level of the blood.

Q.—It means weaker? A.—Weaker.

Q.—Is there any reason in your opinion why a solution such as that—I will change that question. Is there any functional effect in your opinion from injecting a solution such as that into the human veins? A.—Well, of course, experimentally it was used a number of years back, four or five years ago, but it was discarded as being an inadequate agent.

Q.—That occasion you are referring to, was it or was it not of the same proportion I have given you here? A.—No, it was a stronger solution.

Q.—As a matter of fact, it was about one to five hundred or one to two or three hundred? A.—Yes.

Q.—But never one to a thousand? A.—No.

Q.—Have there ever been any indications even with that concentration that it has an effect of combating infection? A.—I think it has been disproved in later years.

Q.—Incidentally, would an injection of that material have any effect on sexual rejuvenation? A.—It would not.

Q.—Or on any of these other things I have spoken of? A.—No.

Q.—Would it have any effect, injecting distilled water into a person? A.—Not in that dilution.

Q.—Now, Doctor, do you know Dr. John R. Brinkley, do you know his general reputation among men, members of the medical profession?

Mr. Morriss Sr.:—The same objection.

THE COURT:—Why don't you fix the time, counsel?

Q.—Do you know the general reputation of Dr. John R. Brinkley among members of the medical profession in February 1938?

Mr. Morriss Jr.:—Now, we object to that because it isn't confined to the place of the defendant's residence, and for all of the reasons stated before. May that be understood without our restating that?

THE COURT:—You want to take the same objection you took to it before, the other doctor, Dr. Folsom?

Mr. Morriss Jr.:—Yes, may we have that?

THE COURT:—I will give you that.

Mr. Morriss Jr.:—To all of these questions, unless there is some different line of interrogation, may it be understood that the same objection goes to all of these questions, the same objection goes as was made?

THE COURT:—I understand you are objecting to me allowing them to ask him questions and receive answers with regard to the doctor's general reputation?

Mr. Morriss Jr.:—Yes, sir, and to—well, we think that many of the questions which they asked were not questions of general reputation and no proper foundation.

THE COURT:—I am going to overrule the objection you are making now and let him answer.

Q.—Doctor, the question was his general reputation among members of the medical profession in February 1938. Do you know? *A.*—Well, I don't know just how to answer that question. You mean in regard to—

Q.—As a medical man? *A.*—Well, it was generally not good.

Mr. Morriss Jr.:—The answer was not responsive.

THE COURT:—He wanted to know if you knew his general reputation. If you do, then he will ask you what it is.

A.—Yes.

Q.—Now, what was that general reputation? Don't say "not good," but tell us what it was.

THE COURT:—I think you had better let him answer the question himself.

Mr. Reynolds:—All right, I am sorry.

A.—Well, do you want to put me another question? I mean I don't know just how to answer that.

Q.—Can't you explain to us what you said you knew his general reputation was at that time as a physician and surgeon?

Mr. Morriss Sr.:—Ask if it was good or otherwise, that will be all right.

Q.—If the gentlemen will allow a conclusion, good or bad, then. *A.*—I would say it was bad.

Q.—Do you know his general reputation at that date in circles more particularly confined to urinologists and genital urinologists?

Mr. Morriss Jr.:—The same objection as before. Now, it wouldn't be necessary, and we don't care to interrupt the line of interrogation, if it may be understood we have the same objection which we made to the questions before.

THE COURT:—I think you have indicated, counsel, to the court your objection to this line of procedure. The new rules say all you have to do is to do that to preserve your record. If you want to keep on bobbing up you have the right to do it.

Mr. Morriss Jr.:—We said we didn't want to do it.

THE COURT:—You said you didn't want to do it, but you keep doing it. I think you have a record on that.

Mr. Morriss Jr.:—Well, your honor, if the court will—

THE COURT:—I am not making any agreements with counsel, that is not my province.

Mr. Morriss Jr.:—All we want is that it may be understood that the same objections go, or otherwise it is our opinion, we may be in error, but it is our opinion that in order to properly preserve our record we must object.

THE COURT:—Well, counsel, you had better preserve your record as you want to. I am not objecting to your objecting.

Q.—Doctor, the last question was confined to the same date, but confined also to urinologists and genital urinary surgeons. *A.*—I would say generally unethical or bad.

Q.—What do you mean by unethical? *A.*—Well, there are certain ethics in religions and medicine and ethics are standards by which we are mutually controlled. We call that the ethics.

Q.—Are you referring only to advertising in that connection? *A.*—No, I would say in general.

Q.—Did Dr. Brinkley have a reputation, either among the medical profession or these more confined groups, at that time as being a prostatic specialist?

Mr. Morriss Jr.:—We object to that as leading and suggestive and not being properly confined to the place of the residence and as being confined to a particular group rather than his general reputation, and as being duplicitous as it inquires as to several groups.

THE COURT:—Do you think his reputation would have to be confined to Val Verde County?

Mr. Morriss Jr.:—We think that is the proper test, yes, sir.

THE COURTS—He has testified himself that he has been licensed to practice all over the country and he has issued literature that he has performed operations all over the world and he is known internationally, and I don't think you can tie that down just to Val Verde County.

Mr. Morriss Jr.:—That is our view.

THE COURT:—Overrule the objection.

Mr. Morriss Jr.:—Either that or where he has lived or practiced his profession, in that community.

THE COURT:—He sketched here yesterday that by advertising over the radio he drew patronage from a portion of the country he delineated here that goes up to the Great Lakes and portions of Pennsylvania, and I don't believe you can limit that.

Mr. Morriss Jr.:—We also object also to being confined to a particular portion or group in any given locality and not confined to his general reputation in that respect, but only as among a particular group. You might ask if some member was in bad repute with a club or something like that.

THE COURT:—I don't think that is analogous. Overrule the objection.

Q.—Doctor, the question was if at that time and in those circles, the medical profession generally, he had a reputation of being a prostatic specialist? *A.*—You say did he have?

Q.—That is right, did he have? *A.*—In our association?

Q.—In medical—in the medical profession generally or in the circles confined to urinologists and genito-urinary surgeons, during February 1938? *A.*—No.

Q.—Did he have a reputation of being a genito-urinary surgeon or specialist in that?

Mr. Morriss Jr.:—The same objection to that.

A.—No.

Q.—Did he have the reputation, if you know, of being the greatest prostatic specialist in the world? *A.*—No.

Mr. Morriss Jr.:—The same objection.

Q.—Does he have that reputation now? *A.*—No.

Mr. Morriss Jr.:—Now, we object to the last question as being irrelevant and immaterial to any issue in the case.

THE COURT:—All right.

Mr. Morriss Jr.:—Not confined to the proper time.

CROSS EXAMINATION

Questions by Mr. Morriss Sr.:

Q.—Doctor, you have been practicing in Houston how long? *A.*—Twenty-six years.

Q.—And you have been a member of the American Medical Association how long? *A.*—Twenty-seven years.

Q.—Who asked you to come here, Doctor? *A.*—Who asked me to come?

Q.—Yes. *A.*—The secretary of the State Medical Association of Texas.

Q.—What is his name? *A.*—Holman Taylor.

Q.—In other words, he telephoned you? *A.*—Yes, sir.

Q.—And now, Doctor, you have spoken about the gland operation. What experience have you had in that particular operation, observing it or performing it yourself, that counsel asked you about? *A.*—Well, I haven't done any of the performing of the operations, but I have observed some that have been performed.

Q.—But I am asking you if you have had any particular observation yourself of the operation or in performing it yourself, you have never performed it or been present at it? *A.*—I have not.

Q.—Now, Doctor, there has been a very great advancement in the profession in the past thirty to forty years through all manner of experimentation, has there not? *A.*—Yes.

Q.—You would say that there has been more advancements in the profession of medicine and surgery in the past thirty or forty years than all the history we have record of before, wouldn't you? *A.*—That is very true.

Q.—And, Doctor, they have been doing a great deal of transplanting in late years? For instance, transplanting skin and bone and such as that, haven't they? There has been a great deal of that, and flesh? *A.*—It isn't transplanted, it is grafting.

Q.—Grafting it is the same thing? *A.*—No.

Q.—You cut it off one person or place and transplant it to the other part on the other person and it successfully attaches and grows on there, doesn't it? *A.*—It does in instances in which it is possible to perform.

Q.—That is what I mean, and there has been a vast deal accomplished to the human in that respect, to the human good, in later years, hasn't there doctor? *A.*—There has been no instance of tissue like that being transplanted.

Q.—I am asking you about transplantation. *A.*—Yes, of skin and bone.

Q.—And, Doctor, in reference to the operation—operations for or treatment of the prostate gland, there has been a great advance made throughout the period of the last thirty years in that, hasn't there? *A.*—Yes.

Q.—A little bit back of that time or just behind that time, about the first thing they usually would do was castrate, and that wasn't satisfactory, was it? *A.*—That dates back a hundred years.

Q.—How far back would you say the practice, the common practice, I mean the practice among specialists of that line, the practice of the complete removal of the gland dates back? *A.*—The early fifties.

Q.—Well, it wasn't practiced in our region here with any degree of generality until the last thirty-five or forty years, was it, Doctor? *A.*—Well, fifty, maybe, or sixty or seventy.

Q.—And many, many now perform what is called the transurethric operation, the transurethral operation? *A.*—Yes.

Q.—In severe cases of prostatic trouble? *A.*—Yes.

Q.—Those operations are rather common, aren't they? *A.*—Yes, they are.

Q.—That is where you go through the urethra and you cut away or whittle away—in other words, what is called a reaming operation, isn't it? *A.*—Yes, you might call it that.

Q.—And, of course, when it is bad enough the only way yet is to take it out, isn't it? *A.*—I didn't get that.

Q.—When it is bad enough you can't do it that way, the only method then generally is to take out the entire—that is, the abdominal operation which removes the gland entirely? *A.*—Well, of course, there are a number of methods that are accepted as treatment for prostatic enlargement, and transurethral is only one of three accepted and approved methods. That is limited to a certain group.

Q.—And then the removal, the complete removal by the abdominal process? *A.*—It is impossible to completely remove the prostate by any method.

Q.—You say that you remove all you can get if it is diseased? *A.*—The hypertrophy portion.

Q.—In the transurethral you don't remove it all, do you? *A.*—No.

Q.—Then, Doctor, of course, any method for relief of that very common trouble which would spare the necessity of the operation, even the transurethral, would be a great boon to humanity, wouldn't it? *A.*—It certainly would.

Q.—And, Doctor, any experimentation and finding out a way for human relief, you accomplish it by trying the operations and noting the results, don't you? *A.*—You do.

Q.—And of course if you operate some method upon a large number of persons and you find a very high per cent of satisfactory results, then that is about the best way to know that that operation is successful, isn't it? *A.*—That is the way we all judge ourselves, of course, by statistical data which is compiled by the group.

Q.—Now, Doctor, what is it that causes prostate enlargement? *A.*—That is something that none of us know.

Q.—You just don't know what does cause it, but it is very common, isn't it? *A.*—We think, we have our ideas.

Q.—It is very common, isn't it? *A.*—It is in certain stages of life.

Q.—Well, be more specific, Doctor, what stages? *A.*—Well, the fifties, sixty and seventy years.

Q.—Well, what are your ideas about what causes it? You spoke about your ideas. *A.*—Well, you have to go into the usual accepted principles that are written in our books. It is a tumorous hypertrophy or enlargement or increase in the elements of the prostate in which it grows as a tumor.

Q.—Well, but does that get back to the question of what causes, what causes the growth? *A.*—I don't believe there is anybody that has ever written a positive statement on it.

Q.—I thought you said you had your ideas, aside from whether— *A.*—Well, my idea wouldn't be worth much individually, except what I can prove.

Q.—In other words, you wouldn't be able to express any opinion of your own as to what does cause it? *A.*—Well, it is analogous in life to the change in the female. It is ordained by nature, which we haven't solved. It is the change of life.

Q.—That is your idea of the only cause? *A.*—That is the accepted cause.

Q.—All right. Now, then, Doctor, is that some unbalancing of the male and female sexual hormones which might cause it, is that what it is? *A.*—It isn't all. It is one of the many hundreds of theories that have been propounded. It is not an accepted theory.

Q.—You mean there are many hundreds of theories that have been advanced as to what causes it? *A.*—Well, they have in due course of time.

Q.—So it is a matter the profession is largely in the dark about yet, is that it, Doctor? *A.*—I think that the accepted present status is due to the so-called change of life in the male.

Q.—Would that be akin to the unbalancing of the sex hormones in the male? In other words, the male and female sex hormones in the individual, that is what you mean by that? *A.*—Not necessarily. As I just stated, there is one theory, that is one theory that has been advanced by a certain group of physicians, and hasn't been accepted.

Q.—You wouldn't say that isn't it? *A.*—It never has been proven.

Q.—Now, Doctor, you have been pretty closely connected with the medical associations, the American Medical Association and these other associations, for a good many years? *A.*—Yes.

Q.—I assume you have had business dealings with the association, the American Medical Association? *A.*—Yes.

Q.—And communication and association in that association with Dr. Fishbein, known him? *A.*—Yes.

Q.—And, Doctor, you don't know, or did you know, whether Dr. Brinkley was ever a member of the American Medical Association or not? *A.*—Yes, I think he was.

Q.—Do you know how long? *A.*—Well, I never had occasion to check up on it. I think up until some time when he was at Milford, Kansas. I don't know what the dates were.

Q.—Well, it was about the time he began radio announcements of his operations, wasn't it? *A.*—Those dates I don't recall.

Q.—Now, Doctor, did you or not have any personal acquaintance with him then or at any time have you ever had any personal acquaintance with him? *A.*—No, sir.

Q.—Have you ever been to his hospital while it was at Milford, Kansas, to go through it or to see anything about his work? *A.*—No.

Q.—It is in evidence that he had his hospital here from 1933 up to last year. Did you ever have occasion to visit his hospital here? *A.*—No.

Q.—Or to talk with him? *A.*—No.

Q.—Or with any of his physicians or nurses or employees of the hospital, as to the nature of his operation and the work? *A.*—No.

Q.—You have, then, no first hand information or knowledge whatsoever about the work or about his operations? *A.*—Oh, yes.

Q.—I say you have no first hand information, all you know is what somebody away who didn't do the work or wasn't present has told you, is that all? *A.*—Well, the first time that I ever learned of his procedure was through a group of physicians at Wichita, Kansas, at the time Dr. Brinkley was in Milford, Kansas.

Q.—I am talking about you never had any contact with his hospital or him or any of his co-operators or anything of that kind? *A.*—No.

Q.—You are a supporter and member of the American Medical Association, you say? *A.*—Yes, sir.

Q.—And of Dr. Fishbein's faction, we might call it, in that organization? *A.*—I didn't know there were any factions.

Q.—Well, you do know that there are many factions, that is to say, there are many controversies inside the medical association about policies and matters of that kind, you know that, don't you? *A.*—Oh, there might be on minor points, but the general setup, of course, is well organized.

Q.—Well, you do know that there has also been very considerable discussion and controversy inside the association and out about some of Dr. Fishbein's operations? I don't mean physical operations on people, I am talking about his policies, in the last year or so, you know that, don't you? *A.*—I do not.

Q.—You have read about those protests, haven't you? *A.*—I haven't.

Q.—You are acquainted with them? *A.*—No.

Q.—Had you read the book that—

THE COURT:—Counsel, I think that is entirely collateral matter.

Mr. Morriss Sr.:—I beg your pardon.

THE COURT:—I think those are collateral matters.

Mr. Morriss Sr.:—Yes, sir, I think it is unnecessary, your honor. That is all

RE-DIRECT EXAMINATION

Questions by Mr. Reynolds:

Q.—You testified here regarding a certain type of operation in which these little ducts were tied off and so forth. In your opinion is that operation, does that operation have anything about it at all that indicates that it could or might be this great boon to humanity that Mr. Morriss asked you about?

Mr. Morriss Jr.:—Just a moment. That question is improper, argumentative, leading and suggestive. We object to it for all those reasons.

THE COURT:—Overrule the objection.

Mr. Morriss Jr.:—Note the exception.

Q.—Will you answer the question? *A.*—I would say it could not.

Q.—After hearing about that operation have you yourself any particular desire to pursue its study further?

Mr. Morriss Sr.:—I didn't get that.

Mr. Reynolds:—I asked him if he had any desire to pursue that study.

A.—(No answer.)

Q.—Now, Doctor, several things here were said about grafting skin and bone. Is there any difference between the theories and physical structures underlying the grafting of skin and bone and that of glands such as the testes? *A.*—It is a very marked difference.

Q.—Will you explain that just in a general way, in common language so we can get an idea of it? *A.*—Well, of course, skin and bone is known as structural nonfunctioning, relatively. Of course, you get out in deep water when you go to describe any of these structures. But the grafting of skin and bone by transplantation, that can be done, but if you attempt to remove an organ you destroy its blood supply and nerve supply, and it is humanly impossible to unite, anastomose or join together these life giving properties which come through the blood supply and nerve supply.

Q.—Do you know of any recorded case of successfully transplanting any gland or any organ? *A.*—Not on record.

RE-CROSS EXAMINATION

Questions by Mr. Morriss Sr.:

Q.—Doctor, what about the grafting of the cornea of the eye? *A.*—That is analogous to the skin.

Q.—I say they are doing that? *A.*—Oh, yes.

Q.—Is that skin? *A.*—It is analogous to it.

Q.—What is the cornea composed of? *A.*—It is composed of an epithelium cover. It is analogous to a covering of skin.

Q.—And they do perform the operation very frequently now, removing the eye and operating on it and putting it back, don't they? That is a common operation? *A.*—No.

Mr. Reynolds:—I object to that. That has nothing to do with it. It is just prolonging it, whether you pull out an eye and operate on it.

THE COURT:—Just a minute. Maybe he is about through. Is that all, counsel?

Mr. Morriss Sr.:—Yes, sir.

Q.—You know that Dr. Stailey of San Quentin is a member of the A. M. A., you know of him and know who he is? *A.*—Yes, sir, the penitentiary physician.

Q.—I will ask you if he hasn't reported some 10,000 goat gland operations? *A.*—No.

Q.—Do you know that? *A.*—He reported some 10,000 vasectomy operations. That has nothing to do with goat glands.

Q.—Just what are the 10,000 operations he speaks of? *A.*—It consists of removing a portion of the vas, which is the tube that carries the sperm from the testicle, and sterilizes the inmates of the penitentiary.

Q.—Have you ever attempted or done that operation, Doctor? *A.*—I have.

Q.—And has he done that operation with success, this doctor, is he reported to have done that operation with success? *A.*—Yes, sir.

Q.—In other words, Doctor, there is a vast amount of experimentation going on and constantly being carried forward in the interest of medical science, some of which after a time are abandoned and some of which are carried forward successfully, isn't that true? *A.*—Yes, to some degree.

Q.—And in that connection, as you said, the greatest amount of experimentation and greatest amount of advancement has come within the past thirty or forty years? *A.*—Yes.

Q.—And now, with reference to that and in recent years, the animal secretions or the secretions of the animal glands have played a very large part, haven't they? *A.*—Gland extracts, you mean?

Q.—Yes. For instance, you speak of the thyroid. That has been learned in late years, and you may by reason of the thyroid secretion, that is adding more or less—you learn how to make the stout person thin and the thin person stout by the same medicine, don't you, Doctor? *A.*—Yes.

Q.—You have learned that, haven't you, Doctor? *A.*—Yes.

Q.—What is the thyroid gland secretion, what is it they use, what is that, the thyroid medicine, what is it an extract of? *A.*—It is extracts of the thyroid gland dried, desiccated.

Q.—What animal? *A.*—Various animals. I think mostly Mr. Armour handles it through his plant.

Q.—What animals, Doctor? *A.*—I don't know for sure.

THE COURT:—What is the relevancy of that?

Mr. Morriss Sr.:—I will just ask this further question.

THE COURT:—I know, but I have been in hopes counsel would turn loose some time. I believe you are a long way afield.

Mr. Morriss Sr.:—I will be through with this one question.

Q.—The same thing with reference to the sex glands, they have used that a great deal in the last few years, haven't they, and the hormones? *A.*—The thyroid is the only successful gland to date. There are some other glands that have been used.

Q.—Been used by many, many of the very best recognized physicians, too, aren't they, Doctor? *A.*—With limitations, and it depends on which ones are used. Some of which have been proved to be no good.

Q.—Yes, but many of them are accepted now and are being used by the best physicians? *A.*—Yes.

RE-DIRECT EXAMINATION

Questions by Mr. Reynolds:

Q.—Doctor, what is it that Dr. Sterling did and was that experimental in any way, or Dr. Stailey, at the penitentiary? *A.*—It was not experimental at all, it was a resection of a portion, of a portion of the vas, which was done by physicians seventy-five years ago and a hundred years ago.

Witness excused.

At this time a short recess was had, at the conclusion of which the following proceedings were had, in the presence of the jury:

TESTIMONY OF JOHN MANNING VENABLE

Dr. John Manning Venable testified as to his qualifications by stating his medical education, including graduate work and his membership in various medical organizations and on hospital staffs. The testimony then proceeded:

Q.—Do you know of John R. Brinkley, Dr. John R. Brinkley, the plaintiff in this case? *A.*—I have heard of him.

Q.—Has he, to your knowledge, ever been a member of any of those organizations you have named? *A.*—No, sir.

Q.—Now, you know Dr. Brinkley used to advertise himself as a goat gland specialist, do you? *A.*—Yes, sir.

Q.—In your opinion, Doctor, is it possible to transplant—

Mr. Morriss Jr.:—Your Honor understands the same objections go to this.

THE COURT:—Yes.

Q.—In your opinion is it possible to transplant the gland of a goat, the testis into the testis of a man by inserting it in a pocket or by any other method? *A.*—No, sir.

Q.—And that is have it still live, I mean to say? *A.*—I understand you, sir.

Q.—Why is that your opinion? *A.*—Because it is unsuitable ground for a graft or transplanting.

Q.—Now, will you explain a little more specifically the fact that it is unsuitable ground. *A.*—Because the place in which it is put in the testicle, the testicular tissue, is not such to afford adequate blood and nerve supply to a graft to make it live.

Q.—What kind of cells are testicles of goats composed of? *A.*—I beg pardon, sir?

Q.—Of what kind of cells are testicles of goats or the testes of goats composed? *A.*—Epithelial cells.

Q.—Is that the same kind of cells of which human skin is composed? *A.*—No, sir.

Q.—Or human bone? *A.*—Not—no, I wouldn't say it was.

Q.—Now, Doctor, assume that in the transplanting process a pocket is cut into the human testicle and as a result human blood comes into that pocket into which the goat gland has been inserted. Wouldn't that furnish a blood supply to keep the goat gland alive? *A.*—No, sir.

Q.—Why not? *A.*—Because that is blood that is from cut vessels. That is not going to stay in there.

Q.—Would it even furnish temporary life? *A.*—No, sir.

Q.—In transplanting the goat gland in that method is it possible for the goat gland—the goat gland nerves to function? *A.*—No, sir.

Q.—Is there any way in which they can be connected, either—

Mr. Morriss Sr.:—I would suggest that counsel not lead the witness altogether.

THE COURT:—Counsel, inasmuch as this evidence is more or less cumulative, I think it desirable to lead him unless you object seriously.

Mr. Morriss Sr.:—I just wondered if you couldn't avoid leading him.

THE COURT:—I think this is repetition, and I think this is about the last evidence of this kind that the Court will allow.

Mr. Reynolds:—This is the last witness we intend to put on this.

THE COURT:—All right, go ahead.

Q.—Doctor, is there any way that the nerve in the testicle can be attached to the human nerve, either artificially or naturally? *A.*—Please frame that again.

Q.—I am asking if there is either natural or artificial methods whereby the nerve in the testicle of the goat can be connected with the nerve in the testicle of a man? *A.*—No, sir.

Q.—What is it that makes tissue live? *A.*—Nourishment from the blood and nerve supply.

Q.—And it is a fact, isn't it, that the blood has to circulate through the tissue? *A.*—Yes, sir.

Q.—The mere presence of it doesn't help? *A.*—No, sir.

Q.—To your knowledge, Doctor, has there ever been a recorded successful transplantation of any gland from animal to man or man to man? *A.*—No, sir.

Q.—Now, Doctor, in your opinion would the transplantation of this goat gland as described, whether or not accompanied by any other technic, would that transplantation itself, have any effect at all on reducing an enlarged prostate? *A.*—No, sir.

Q.—Would it have any effect upon any of the following diseases or dysfunctions: high blood pressure, hardening of the arteries, impotency, that is sexual inability; would it create energy, have an effect on epilepsy, locomotor ataxia, constipation, diseases of the stomach, bowels and kidney, insanity of the type known as dementia praecox, neurasthenia or sterility in man caused by mumps? *A.*—No, sir.

Q.—As a matter of fact, can sterility caused by mumps be cured in any way? *A.*—No, sir.

Q.—And that is because the organ is dead, is that right? *A.*—Yes, sir.

Q.—Would that or not have any effect on cancer? *A.*—No, sir.

Q.—On any type of insanity? *A.*—No, sir.

Q.—What would be the results or effect of the transplanting of that goat gland, what would happen to it? *A.*—Nothing.

Q.—Well, would it just stay there, or what? *A.*—It might be—it would be absorbed, in the event there was no infection it would be absorbed, gradually would become converted into fibrous tissues and be gradually more or less absorbed. There might be a little fibrous tissue left, but not much, where the transplant was placed.

Q.—You said providing there was no infection. Could that gland cause infection? *A.*—Not if it was aseptic technic.

Q.—By that you mean a sterile operation? *A.*—Yes, sir.

Q.—Now, Doctor, regarding the little ducts or tubes between the testicles and the testes and the epididymis that lies along the top of it like a finger, how large are those? *A.*—I would say about the size of a thread or smaller. They vary in size.

Q.—In the ordinary individual can you feel them with your hands? *A.*—No, sir.

Q.—Is it reasonably possible that you can tie off any one of those with a piece of linen thread? *A.*—No, sir.

Q.—Assuming, however, this could be done, would the tying off of part of them in itself have any effect upon an enlarged prostate? *A.*—No, sir.

Q.—What would be the effect of tying off all of them? *A.*—On one side?

Q.—Assume just one testicle, yes, tie off all those. *A.*—That side would get no more sperm around it, around to the urethra.

Q.—The same thing as a sterilization operation? *A.*—Yes.

Q.—A sterilization operation, as one is quite commonly done, is done higher up by taking out a section of the vas deferens, is that right? *A.*—Yes, sir.

Q.—Now, Doctor, assume an operation upon a patient who is said to have a prostate enlargement, where half or more of these little ducts on each side are tied off and where a part of the vas may or may not be cut out or removed, where there is an injection of 2 per cent mercurochrome solution into the vas deferens; that after that operation the postoperative treatment included the injection in the vein of a man over a period of several days the contents of 720—six ampules containing about 20 cc., composed of a thousand parts of distilled water to one part of hydrochloric acid and also a minute amount of blue coloring matter, have you an opinion as to whether or not that entire technic might or could have any effect upon an enlarged prostate? *A.*—It would not.

Q.—Is there any indication in any of those steps there that it is directed toward reducing an enlarged prostate? *A.*—No, sir.

Q.—Now, Doctor, this solution of 1,000:1 distilled water-hydrochloric acid, and a minute amount of blue coloring material, is that what is known as an isotonic solution? *A.*—No, sir.

Q.—It is hypotonic? *A.*—Yes.

Q.—Which means it is much weaker than isotonic? *A.*—Yes, sir.

Q.—As a matter of fact, is there any appreciable difference between that solution and distilled water? *A.*—No, sir.

Q.—Is there any point, therapeutically, that is directed toward the treatment of healing, in your opinion, of injecting a solution of that kind into a man's veins? *A.*—No, sir.

Q.—Would that have, in your opinion, any effect upon restoring sexual vitality? *A.*—No, sir.

Q.—Well, Doctor, I will ask you this question again, now. That operation I described where the ducts were tied off and so on, in your opinion would that operation have any effect on high blood pressure, hardening of the arteries, impotency, epilepsy, locomotor ataxia, constipation, diseases of the stomach, bowels and kidneys, neurasthenia, or any of them? *A.*—This is the injection of this liquid?

Q.—No, it is the whole technic. *A.*—No, it would have no effect.

Q.—Would it have any effect in remedying sterility caused by mumps? *A.*—No, sir.

Q.—As a matter of fact, that sterility caused by mumps cannot be restored at all, can it?

THE COURT:—That has been gone over.

Mr. Reynolds:—I am sorry.

Q.—All right. Now, Doctor, do you know Dr. John R. Brinkley's general reputation among members of the medical profession as a whole in the United States, in February 1938?

Mr. Morriss Sr.:—Just a moment. There is a new objection now. The same objection, by the way, but he says does he know. He can only know that if he knows the medical profession. He said among the medical profession as a whole.

Mr. Reynolds:—Perhaps my language is bad.

THE COURT:—Counsel wants to reframe his question.

Q.—Do you know Dr. Brinkley's general reputation among the members of the medical profession of the United States during February 1938? *A.*—Yes, sir.

Mr. Morriss Jr.:—Just a minute. The same objection to that as heretofore.

THE COURT:—All right, overrule the objection.

Q.—Answer the question yes or no, Doctor. *A.*—I do know it.

Q.—What is that reputation? *A.*—The reputation of making claims that are not substantiated by results.

Q.—Do you know his general reputation among urinologists and genito-urinary surgeons for that same time? *A.*—Yes, sir.

Q.—What is that? *A.*—The same.

Q.—Does he have a reputation among either of those groups, or did he on that date, or does he now, as the greatest prostatic specialist in the world? *A.*—No, sir.

Q.—Does he have a reputation as a prostatic specialist at all? *A.*—No, sir.

Q.—Does he have a reputation of a genito-urinary surgeon at all? *A.*—No, sir.

Q.—Doctor, what in your opinion—no, strike that. Doctor, do you know what in the medical circles and the public generally is usually and customarily and usually understood by the word quack?

Mr. Morriss Jr.:—Now, we object to that, if the Court please, on the ground that what is usually and customarily understood among the medical profession wouldn't govern at all.

THE COURT:—He asked if he knew what was understood by the medical profession and the public generally by the word quack.

Mr. Morriss Jr.:—As we understand it, it is the province of the Court to instruct the jury what quack means.

THE COURT:—What quack means?

Mr. Morriss Jr.:—Yes, sir.

THE COURT:—I don't think so.

Mr. Morriss Jr.:—We have authority for that.

THE COURT:—It may be, but I think the common significance of the word, the idea that it would carry to the public generally, is what governs it. For instance, if I said you were a bum the public generally has an idea what it means. You might get four or five definitions of that from different people, but in the last analysis it is what the public generally and reasonably would think the word meant, the significance that is carried by the word to them. You can go to the dictionaries, I think, and get five or six definitions of the word quack, depending on what dictionary you go to. You could go to the law books and get definitions. You could get different definitions from the doctors. I am subject to correction if you can show me. It is my idea what would the general public get from the language. If you said a doctor was a quack just as if you were speaking of a lawyer if you said a lawyer is a shyster, what would the significance of that be? Ten lawyers might give you ten different definitions of a shyster, but the general public has an idea what it means.

Mr. Morriss Jr.:—Where a term is colloquial and has no established definition I think the Court is incorrect.

THE COURT:—I might be wrong, but I am going to let him testify. I think the public in general and the medical profession think a quack is what they think it is. Go ahead.

A.—What a quack means. A quack is one who presents claims that cannot be substantiated by facts nor results.

Q.—Doctor, in your understanding is it usual and customary for members of the medical profession, if you know, to advertise their remedies and treatments? *A.*—Commercial advertising?

Q.—Yes. *A.*—No, sir.

Q.—You know that Dr. Brinkley does do that? *A.*—Yes, sir.

Q.—Does that in any way enter into your definition of the word quack? *A.*—Not necessarily, no, sir.

CROSS EXAMINATION

Questions by Mr. Morriss Sr.:

Q.—Doctor, who got you to come out here? *A.*—I beg pardon, sir?

Q.—Who got you to come out here? *A.*—The American Medical Association.

RE-DIRECT EXAMINATION

Questions by Mr. Reynolds:

Q.—Did you have any correspondence or instructions or communications of any kind from the American Medical Association? *A.*—No, sir.

Q.—Do you expect to be compensated in any way from the American Medical Association for coming here? *A.*—No, sir.

RE-CROSS EXAMINATION

Questions by Mr. Morriss Sr.:

Q.—Doctor, when did you learn about this matter of this doctor being present to witness the gland operation up in Kansas? *A.*—When did I learn about it?

Q.—Yes. You must have learned about that today, didn't you? *A.*—It was yesterday, sir.

Q.—Whom did you learn that from yesterday, Doctor? *A.*—I saw that in the report from Mr. Harrell.

Q.—Doctor, did you say you just came today at the instance of the American Medical Association? You are coming out here at your own expense, is that right? *A.*—Yes, sir.

Witness Excused.

(To be continued)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 20, 1939

"THE CHALLENGE OF APPENDICITIS"

A "challenge" is what Reginald Fitz [1] calls appendicitis. His father [2] in 1886 first emphasized in this country the importance of early removal of the inflamed appendix in order to lower the mortality which follows perforation with its resultant peritonitis. In the more than fifty years that has elapsed, the teachings of the earlier Fitz have been abundantly verified and confirmed by countless clinical observations. The way seemed clear to remove the inflamed appendix from our mortality records as a common cause of death, particularly since, with the development of modern surgery, appendectomy in itself is associated with a mortality which is practically nil. Still true today as it was fifty years ago, however, the deaths which occur from acute appendicitis are found only in those patients who have developed a peritonitis from perforation.

The mortality from acute appendicitis has risen sharply during the past few decades. This constitutes the "challenge of appendicitis." The data illustrating this increasing mortality are not difficult to find. The experience of individual states has been particularly striking. For Massachusetts, Fitz [1] presents data which show a sharply increasing mortality curve from 1908 to 1932. He states that, whereas in 1900 only 243 patients died of acute appendicitis, by 1936 it had risen to 490; there was a higher peak in 1930, when the deaths totaled 610. Horsley [3] for the state of Virginia quotes similar statistics; he noted that the death rate from appendicitis rose from 6.4 per hundred thousand in 1913 to 11 in 1930; it was 10.1 in 1935. Startling data have recently been reported by Krech,[4] who points out that in six large American cities the mortality rate from appendicitis has increased in one year from 14.3 per hundred thousand in 1935 to 17 in 1936. In one metropolis the rise was more pronounced, from 14.5 to 23.5 deaths per hundred thousand. These figures are from cities having ample hospital facilities and grade A medical schools; obviously these advantages are not being fully utilized. Hudson [5] has pointed out that, of every twenty children who die, one dies of acute appendicitis. Indeed, the large proportion of the deaths in his disease unfortunately occur in children and young, healthy adults, a factor which makes the challenge even more alarming. In the entire United States more than 16,000 deaths are recorded as produced by appendicitis in 1936; this is a total 50 per cent greater than all deaths due to pregnancy and childbirth in the same period.[4] In several communities the problem has been considered important from the public health point of view and vigorous educational campaigns and propaganda have been instituted in order to educate the public to help meet this challenge.

Education of the public about appendicitis applies to the most important two factors responsible for the increasing mortality, i. e. the increasing use of cathartics for abdominal pain and the delay in the diagnosis and treatment of acute appendicitis. Both factors are associated when any one goes to a drug store for relief from a "belly ache" and indulges in catharsis. This point must be repeatedly emphasized; those with abdominal pain must be warned repeatedly against the dangers of the great American habit of purgation.

Early diagnosis, once the public is educated, lies of course in the hands of the general practitioner. Early diagnosis is not particularly difficult and if followed by prompt appendectomy results in an almost 100 per cent recovery. Unfortunately, this teaching in recent years has received a setback by the resurrection of the 40 year old Ochsner or delayed operative therapy. This swing of the pendulum has been initiated by surgeons; they have done so, however, only as a method of reducing the high mortality in patients past the stage of early diagnosis and who are already suffering from peritonitis. Unfortunately, this teaching, though applied by surgeons to a relatively limited group of patients, has produced in the minds of many physicians a change of attitude toward treatment of all types of acute appendicitis. There has been a tendency to postpone operative therapy in all cases instead of urging appendectomy promptly after the onset of the disease. As expressed by F. A. Coller,[6] "There is one great drawback to advocating any type of delay in the operative treatment of the complications of appendicitis. . . . The bare mention of conservatism in any connection with appendicitis is often misconstrued to mean medical treatment for all appendicitis." A. O. Whipple [7] says "During the past year I have seen four patients . . . with peritonitis" due to appendicitis which the physicians had treated medically because they had "read a good

1. Fitz, Reginald: The Challenge of Appendicitis, Ann. Int. Med. **12**: 1442 (March) 1939.
2. Fitz, Reginald: Perforating Inflammation of the Vermiform Appendix with Special Reference to Its Early Diagnosis and Treatment, Am. J. M. Sc. **92**: 321, 1886.
3. Horsley, J. S., in discussion on Appendical Abscess, Tr. Am. S. A. **56**: 362, 1938.
4. Krech, Shepard: Appendicitis as a Public Health Problem, S. Clin. North America **19**: 273 (April) 1939.
5. Hudson, H. W., Jr.: Acute Appendicitis in Children: The Challenge of Its Continuing High Mortality, New England J. Med. **212**: 670 (April 11) 1935.
6. Coller, F. A., in discussion on Appendical Abscess, Tr. Am. S. A. **56**: 361, 1938.
7. Whipple, A. O., in discussion on Appendical Abscess, Tr. Am. S. A. **56**: 366, 1938.

deal of literature recently about conservative treatment of appendicitis." Birnie [8] finds that this change in point of view has even reached the medical schools; he says "I have been extremely shocked and disturbed at the state of mind of a good many of the interns . . . high-class men . . . [who] seem to think that in all cases of acute appendicitis there are two courses open: you can operate at once or you can use the deferred treatment. . . . Something is radically wrong with the teaching of today if medical students are sent out with the idea that in these cases of appendicitis it is perfectly safe to wait."

From these expressions it seems that there is a growing failure to realize the importance of the old teachings of Fitz.[2] As stated succinctly by William Osler,[9] "There is no medicinal treatment of acute appendicitis." That the situation at present is actually contrary to this teaching is shown for example by Hudson,[5] whose observations are particularly distressing; he found in 100 consecutive admissions for acute appendicitis at the Boston Children's Hospital that only twenty-eight patients were sent to the hospital within twenty-four hours of the onset of pain; significantly all but one recovered rapidly after appendectomy. It was entirely among the remaining seventy-two who entered the hospital more than twenty-four hours after the onset that complications and death occurred. Elman,[10] in a study of peritonitis from ruptured acute appendicitis at the St. Louis Children's Hospital, has emphasized that the delayed operation should be reserved for a small group of patients. In children admitted in good general condition prompt appendectomy is followed by the lowest mortality "whether the appendix is actually ruptured or not." He further emphasizes the difficulty of deciding in many cases whether or not the appendix is ruptured. From the practical point of view this decision in itself is not important.

Reports in surgical literature as reviewed by Ransom [11] do not change but really reinforce the significance of this teaching. The surgeon when he writes of delayed operation in cases of appendicitis refers only to those with peritonitis, cases in which peritonitis should really never have been permitted to develop. The challenge of appendicitis does not concern the treatment in this group; indeed, it concerns the problem of eliminating this group. When all cases of acute appendicitis are recognized early and operation is performed early, no one need die of the results of this disease. Fitz [1] concludes his current paper before the American College of Physicians with this statement:

> Appendicitis, in spite of being a fashionable and well studied disease for more than fifty years, continues to slap our faces insultingly. It is easily recognized. Its treatment, on the whole, is satisfactory, yet it continues to kill each year an unnecessary number of people. May concerted action soon be taken by the American medical profession to meet the challenge of appendicitis and relegate it to the ranks where it belongs: a disease easily diagnosed, of no great danger and, when recognized early and submitted to proper treatment, readily amenable to cure.

8. Birnie, J. M., in discussion on Appendicitis, New England J. Med. **219:** 338 (Sept. 8) 1938.
9. Osler, William: The Principles and Practice of Medicine, ed. 8, New York, D. Appleton & Co., 1919, p. 538.
10. Elman, Robert: Peritonitis Due to Ruptured Acute Appendicitis in Children: Influence of Delay in the Operative Mortality, Am. J. Digest. Dis. **5:** 804 (Feb.) 1939.
11. Ransom, H. K.: Delayed Intervention in Appendical Abscess and Spreading Peritonitis Due to Appendicitis, Internat. Abst. Surg., in Surg., Gynec. & Obst. **68:** 359 (April) 1939.

ASBESTOSIS

Asbestosis, a definite form of pneumoconiosis, is now generally recognized as an industrial hazard. The first fatal case of asbestosis was apparently described in 1900 by Montague Murray in the Charing Cross Hospital *Gazette*. Cooke's [1] short note in 1924 on the case of a woman dying of asbestosis, and a later paper published in 1927, established asbestosis as a distinct variety of pneumoconiosis.

Asbestos is a fibrous mineral that can be carded, spun and woven. It is a silicate associated most commonly with chrome iron and magnetite. Microscopically asbestos fiber, according to Cooke, is seen to consist of two elements: the bulk of the fiber is translucent and glistening, with here and there black, opaque, angular particles and minute black granules. The dust generated during manufacture consists of these sharp, angular particles and minute granules. Analysis of the dust reveals that the latter are the iron-containing portions of asbestos. These particles, Cooke states, are the "bugbear of the manufacturer, the cause of dust, and a danger to the health of workers in the process of manufacture."

Microscopic sections of the lung in Cooke's case showed an enormous amount of fine granular pigment in the peribronchial fibrous tissue, in the walls of the alveoli, and large, solid, angular particles, which he felt sure were the heavy, brittle, iron-containing fragments of asbestos. McDonald,[2] in his report on the microscopic appearances of pulmonary tissue in Cooke's case, describes peculiar foreign bodies in the alveoli, bronchioles and interstitial fibrotic areas, to which he refers as "asbestosis bodies." Stewart and Haddow [3] of Leeds and Lynch and Smith [4] of Charleston, S. C., demonstrated asbestosis bodies in the sputum of asbestos workers.

In a recent paper Sayers and Dreessen [5] of the U. S. Public Health Service report the results of an engineering and medical study of the health hazards in the asbestos textile industry in North Carolina. They found pulmonary asbestosis to be the principal physical defect in 541 workers whom they examined. The clinical symptoms included progressive dyspnea, variable cough, substernal chest pain, blood streaked

1. Cooke, W. E.: Pulmonary Asbestosis, Brit. M. J. **2:** 1024 (Dec. 3) 1927.
2. McDonald, S.: Histology of Pulmonary Asbestosis, Brit. M. J. **2:** 1025 (Dec. 3) 1927.
3. Stewart, M. J., and Haddow, A. C.: Demonstration of Peculiar Bodies ("Asbestosis Bodies") in Material Obtained by Lung Puncture and in the Sputum, J. Path. & Bact. **32:** 172 (Jan.) 1929.
4. Lynch, K. M., and Smith, W. A.: Asbestosis Bodies in Sputum and Lung, J. A. M. A. **95:** 659 (Aug. 30) 1930.
5. Sayers, R. R., and Dreessen, W. C.: Asbestosis, Am. J. Pub. Health **29:** 205 (March) 1939.

sputum, decreased chest expansion, emaciation, weakness, clubbed fingers or curved nails. Late in the disease the dyspnea becomes distressing, cyanosis may occur and there may be paroxysms of coughing productive of tenacious sputum. The characteristic roentgenographic appearances of the chest indicate granular or ground glass markings, with more or less obliteration of linear pulmonic markings, localized in the midlung and the bases. Single sputum specimen analysis in each case revealed increased incidence of asbestos bodies with increasing dust exposure. Such bodies were found in the sputum of 46.9 per cent of persons whose condition was diagnosed as asbestosis, whereas 24.3 per cent of normal asbestos-exposed persons had these bodies in the sputum. They were not observed in any of the persons surveyed with less than three months' exposure. The more serious forms of the disease were observed in carders, spinners, weavers, twisters, willowers and pickers. Exposures range from 0.10 to 76 million particles per cubic foot. Thirty-nine persons exposed to the concentration below 2.5 million particles per cubic foot did not have asbestosis. The authors felt that if asbestos dust concentrations in the air are kept below 5 million, new cases of asbestosis will not appear. An engineering study by Page and Bloomfield [6] demonstrated that means are already available for reducing the dust exposure of a majority of asbestos textile workers to less than this amount. The basis of this control is exhaust ventilation near the source of dust.

6. Page, R. T., and Bloomfield, J. J.: A Study of Dust Control Methods in an Asbestos Fabricating Plant, Pub. Health Rep. **52**: 1713 (Nov. 26) 1937.

CARBOHYDRATES AS CONSTITUENTS OF PROTEINS

The first suggestion that carbohydrates may be components of all proteins was made by Claude Bernard, although the basis for this idea was an erroneous interpretation of experimental data. Early in the course of his brilliant studies on the physiology of glycogen, Bernard observed that the feeding of protein to dogs led to an increased deposition of glycogen in the livers of the experimental animals. As this work was done at a time when information regarding either the structure of proteins or the mode of synthesis of sugars in the organism or in the laboratory did not exist, Bernard assumed that the sugar molecule was preformed in the protein and postulated a glucosidic theory of protein structure. However, when the investigations of Lusk and his pupils demonstrated the synthesis of sugar from amino acids, the physiologic basis for the glucosidic structure of proteins disappeared. The presence of carbohydrates in proteins was believed to be limited to a small group of conjugated proteins, the so-called glucoproteins. Despite this view a general lack of agreement prevails as to whether or not the simpler proteins, particularly albumins or globulins, possess carbohydrate constituents. Early sporadic reports of the isolation of carbohydrates or carbohydrate derivatives from the breakdown of proteins were interpreted as indicating an impure starting material contaminated with carbohydrate. Indeed, investigators of protein chemistry frequently used a negative carbohydrate test as a criterion of the purity of their protein preparations.

Within relatively recent times, investigators have reopened the question as to whether carbohydrates may actually be components of the simpler proteins or are present as impurities in the various preparations. The increasing evidence of the important role of carbohydrates in the determination of immunologic specificity has stimulated interest in the possible role of such groups in influencing the antigenic capacity of proteins. Suggestive indication of the presence of carbohydrate in crystalline egg albumin was presented by Fränkel and Jellinek,[1] who confirmed earlier reports of the presence of a polysaccharide in this protein. Considerable interest was added to this investigation because of the identification of mannose among the hydrolytic products of the polysaccharide, thus making available the first definite evidence for the occurrence of this particular monosaccharide in animal tissues. Repetition of this work by other investigators [2] led to essentially confirmatory results, with the conclusion, however, that the carbohydrate is not derived from the egg albumin itself but rather from ovomucoid, present in small amounts. Considerable light was thrown on this controversial subject by the introduction of a colorimetric technic, which led to the quantitative detection of carbohydrates in almost all proteins examined.[3] This striking announcement of the ubiquitous distribution in nature of carbohydrate components of proteins was received with skepticism. Nevertheless, investigations of the composition of various proteins [4] have included reports of the actual isolation of carbohydrate constituents. The carbohydrates that have been identified are mannose, galactose and glucosamine, and the amounts of each of these appear to differ in the various proteins. In some, e. g. certain of the serum proteins, the polysaccharide present has been reported to be composed of units having the composition galactose-mannose-glucosamine, while in other proteins, e. g. egg albumin, only mannose and glucosamine are present. The carbohydrate component of egg albumin was critically examined recently by Neuberger,[5] who demonstrated the integral position of the carbohydrate in egg albumin by a failure to separate the carbohydrate from the protein by denaturation or ultrafiltration. This observation, taken together with the constancy of carbohydrate content on repeated recrystallization of the protein, establishes definitely the firm attachment

1. Fränkel, S., and Jellinek, C.: Biochem. Ztschr. **185**: 392, 1927.
2. Levene, P. A., and Mori, T.: J. Biol. Chem. **84**: 49 (Oct.) 1929.
3. Sorensen, M.: Compt. rend. Lab. Carlsberg **20**: 3, 1934.
4. Rimmington, Claude: Biochem J. **23**: 430 (No. 3) 1929; **25**: 1062 (No. 4) 1931. Hewitt, L. F., ibid. **32**: 1554 (Sept.) 1938.
5. Neuberger, A.: Biochem. J. **32**: 1435 (Sept.) 1938.

between the carbohydrate and the protein. By the use of a newly developed technic, it is reported possible to isolate in almost quantitative yield the carbohydrate group of crystalline egg albumin. The properties of the isolated polysaccharide are described in detail. It is shown to have a molecular weight of about 1,200 and to be composed of four molecules of mannose and two of glucosamine, together with an unidentified nitrogenous constituent.

Although the mode of combination of the carbohydrate with the rest of the molecule remains unexplained, the concept of carbohydrates as constituents of proteins must be considered in connection with theories of protein configuration. The application of similar technic to other proteins may aid in determining to what extent the carbohydrate components of physiologically important proteins determine their immunologic properties and biologic specificity.

Current Comment

A SKIN TEST FOR TOLERANCE TO ALCOHOL

About a year has passed since Nagle [1] proposed an endermic test for tolerance to alcohol. This test, developed in the state psychiatric clinic at Agnew, Calif., consists of an intracutaneous injection of 0.03 cc. of 60 per cent ethyl alcohol (U. S. P.) in the deltoid region with a control injection of the same volume of physiologic solution of sodium chloride in the opposite arm. A wheal about 9 mm. in diameter almost immediately forms, is common in all instances, and has no diagnostic significance. Surrounding the wheal a zone of erythema soon develops, varying in size and intensity in different persons. The maximum reaction is reached by the end of thirty minutes. In about 20 per cent of the 250 patients thus far tested by Nagle the surrounding erythema was of maximum intensity and about 3 inches (38 cm.) in diameter. These persons were classified by Nagle as + + + + intolerant or allergic to ethyl alcohol. At the other end of his arbitrary allergic scale about 10 per cent of his tested group failed to exhibit peripheral erythemic reaction to his arbitrary test dose. These he classified as belonging to the alcohol tolerant or alcohol immune group. Four intermediary groups are recognized on his arbitrary scale. From a study of the personal histories of these patients, supplemented by determinations of the minimum intoxicating dose of ingested alcohol with about fifty volunteers, Nagle concludes that the relative tolerance or susceptibility to ethyl alcohol as determined by the size and intensity of the skin reaction is a direct quantitative index of individual tolerance or susceptibility to ingested alcohol. Volunteers with negative skin reactions, for example, required in the neighborhood of 2½ ounces (75 cc.) of alcohol taken on an empty stomach before showing signs of intoxication. Only one-fourth ounce (7.5 cc.), or a tenth of this amount of ingested alcohol, is sufficient to cause demonstrable speech defects in volunteers whose skin is + + + + allergic to injected alcohol. Skepticism has been expressed by immunologists [2] as to the logical basis for this alleged parallelism. It is interesting to note, however, that the percentage distribution of alcohol tolerance or susceptibility in the general population as determined by the Nagle skin test is approximately the same as the percentage distribution recently reported by German investigators [3] as a result of quantitative blood analyses. Both sets of data show about 20 per cent of the population hypersensitive to alcoholic beverages and about 10 per cent relatively immune.

1. Nagle, J. M.: J. Allergy **10**: 179 (Jan.) 1939.

IMPORTATION OF RADIUM

Only a few hundred grams of radium has been produced since this element was first discovered in pitchblende by Pierre and Marie Curie in 1898. A large proportion has been used for therapeutic purposes. Although radium is also utilized extensively as an activating agent in the preparation of luminous paints and is employed by metallurgists to inspect flaws in metal castings, as much as nine tenths of the radium mined each year finds a use in medicine, particularly for the treatment of cancer. Many hospitals in the United States have accumulated sizable amounts of the metal. Last year it was reported that the combined radium stores of three institutions, Memorial Hospital in New York, Bellevue Hospital in the same city and the State Institute for the Study of Malignant Disease in Buffalo, amounted to almost an ounce. Almost no radium has been produced in the United States since 1923, when richer and larger deposits became productive elsewhere. After that year this country, although it is still the world's largest consumer, has met its needs by importation. In view of this circumstance the amount of radium imported is of interest particularly as it reflects the use of the metal in medicine. The imports of radium into the United States in 1938 established a new high record and the price paid was the lowest ever recorded, according to the Bureau of Foreign and Domestic Commerce.[1] The United States received from foreign countries a total of 598 grains of radium during 1938, compared with 236 grains imported in 1937 and 339 grains in 1934. The value of the imports in 1938 was $787,000, or approximately $1,316 per grain, compared with a valuation of $377,000 for 1937 or $1,600 per grain and $1,082,500 in 1934 or about $3,193 per grain. In 1929 the import invoice value of radium was approximately $3,500 per grain. An important factor in the reduction of the price of radium was the discovery in Canada a few years ago of radium-bearing ore and subsequent exploitation of these deposits. The reduction in price has fortunately made radium more available. Although the field of the use of radium has been invaded by high voltage x-ray machines, the increasing intensity of the struggle against cancer has more than offset any tendency toward substitution; for internal radiation, in particular, radium therapy possesses unique advantages.

2. Manwaring, W. H., ibid., p. 180.
3. Alcohol and Safe Driving, Berlin Letter, J. A. M. A. **110**: 1617 (May 7) 1938.
1. J. Indust. & Engin. Chem. **17**: 207 (March 20) 1939.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Society News.—The Calhoun County Medical Society was recently addressed, among others, by Drs. Howard R. Mahorner and Warren H. J. Hebert, both of New Orleans, on "Appendicitis and Its Complications" and "Strictures of the Rectum" respectively.

Personal.—Dr. George L. Gresham, Andalusia, was recently appointed chief physician at the Speigner State Prison.——Dr. Nathaniel G. Clark, Birmingham, has been appointed chief medical advisory officer of the department of correction and institutions of the state of Alabama, succeeding Dr. Henry G. Camp, Montgomery, resigned.

State Medical Election.—Dr. Mercer S. Davie, Dothan, was elected president of the Medical Association of the State of Alabama at its annual meeting in Montgomery April 20, succeeding Dr. Seale Harris, Birmingham. Other officers include Drs. John S. Tillman, Clio, and John Paul Jones, Camden, vice presidents of the southeastern and southwestern divisions respectively. Dr. Douglas L. Cannon, Montgomery, was reelected secretary. The association will meet in Birmingham in 1940.

CALIFORNIA

Personal.—Dr. Jacob M. Furstman, health officer of the Monrovia district, has been named administrative head of the Pomona health district.——Dr. Stacy R. Mettier, associate professor of medicine, University of California Medical School, San Francisco, is carrying on a six months' study on hematology and the leukemias at Oxford University, London, under the Nuffield Foundation.

Society News.—The San Francisco County Medical Society devoted its meeting May 9 to a panel discussion of peptic ulcer with the following speakers: Drs. William Dock, chairman; LeRoy H. Briggs, Julian M. Wolfsohn, Leo Henry Garland, Emile F. Holman and George K. Rhodes.——Dr. William D. Sansum, Santa Barbara, discussed "The Problem of the Underweight Patient" before the Hollywood Academy of Medicine April 13.——Dr. Hans Lisser, San Francisco, discussed "Recent Advances in Clinical Endocrinology" before the San Diego County Medical Society May 9.

CONNECTICUT

Dr. Cowdry Lectures at Yale.—Edmund V. Cowdry, Ph.D., professor of cytology, Washington University School of Medicine, St. Louis, will deliver the Woodward lecture at the Sterling Hall of Medicine, May 24, under the auspices of the department of anatomy, Yale University School of Medicine, New Haven. His subject will be "Problems of Ageing."

Grant for Child Research.—The General Education Board of the Rockefeller Foundation has made a grant-in-aid of $85,000 to be distributed over a period of five years, and the Carnegie Corporation has appropriated the amount of $10,000 a year for three years in support of the clinic of child development at the Yale University School of Medicine, New Haven. Under the direction of Dr. Arnold L. Gesell, New Haven, the clinic is continuing its systematic studies of the behavior of infants. A new program which these grants make possible will give special attention to the medical aspects and clinical applications of research in child development, it was announced.

Society News.—Dr. Louis S. Goodman, New Haven, addressed the Hartford County Medical Association April 4 on "Recent Developments in the Therapeutics of Pain."——The Middlesex County Medical Society was addressed in Cromwell April 13 by Dr. Lewis W. Brown, Newark, N. J., on "Allergy in General Practice" and George M. Dutcher, Ph.D., Middletown, "Since Horse and Buggy Days."——At a meeting of the New London County Medical Association, New London, April 6 Dr. Samuel J. Kopetzky, New York, discussed socialized medicine.——Dr. James Raglan Miller, Hartford, addressed the Tolland County Medical Association April 18 in Somers on office gynecology.

ILLINOIS

Personal.—Dr. Walter C. Earl, Cuernavaca, Morelos, Mexico, has been appointed director of the Champaign-Urbana health district, it was recently reported.——Dr. Julius B. Stokes has resigned as superintendent of the Livingston County Sanatorium, Pontiac, effective April 1.

State Medical Election.—Dr. James S. Templeton, Pinckneyville, was chosen president-elect of the Illinois State Medical Society at its annual meeting in Rockford May 4. Dr. James H. Hutton, Chicago, was inducted into the presidency. Dr. Joseph S. Lundholm, Rockford, was elected first vice president, and Dr. Harold M. Camp, Monmouth, and Dr. A. J. Markley, Garden Prairie, were reelected secretary and treasurer respectively. The next annual meeting will be in Peoria.

Chicago

Dr. Taliaferro Made Distinguished Service Professor.—William H. Taliaferro, Ph.D., dean of the division of biological sciences and professor of parasitology, University of Chicago, was awarded the Eliakim H. Moore Distinguished Service Professorship May 4. Dr. Taliaferro received the award in recognition for his work in tropical diseases. The Moore professorship was established in 1927 in recognition of Dr. Moore, professor of mathematics at the university from 1896 to 1931.

Society News.—The Chicago Pathological Society was addressed at its annual meeting May 8, among others, by Drs. Edwin F. Hirsch and Russell H. Morgan on "The Causal Significance to Traumatic Ossification of the Fibrocartilage in Tendon Insertions."——At a meeting of the Chicago Ophthalmological Society May 8, the speakers were Drs. Harry S. Gradle and Daniel Snydacker on "Report of Three Cases of Retinal Detachment Occurring in Glaucoma"; Arthur Weil and Leo L. Mayer, "Attempts to Produce Experimental Tumors of the Eyeball," and Stephan van Wien, "The Leland Refractor: A Method for Refraction Under Binocular Conditions."——Dr. Albert Graeme Mitchell, Cincinnati, will speak on "What I Don't Know About Endocrines" before the Chicago Pediatric Society May 23.

IOWA

Annual Renewal Fees Due Before June 1.—All licenses to practice medicine and surgery in Iowa expire annually on June 30. To renew such a license a licentiate must make a written application to the state department of health before June 1, enclosing the renewal fee of $1. If a license expires by reason of the licentiate's failure to renew it, it can be reinstated without reexamination only on the recommendation of the state department of health and the payment of the overdue fees.

KANSAS

Library for Sedgwick County.—At a meeting of the Sedgwick County Medical Society, Wichita, February 7, the members voted unanimously to establish a medical library. New quarters taken by the society will provide space for the library reading room, the executive secretary's office, the medical service bureau office and a large reception room allowing space for library shelves. A librarian will be employed to catalogue and index material and assist in reference work, according to the *Medical Bulletin*.

MICHIGAN

University News.—A grant of $2,000 from Parke Davis & Co. will provide for a year's research at the Wayne University College of Medicine into the cause and treatment of peptic ulcer. Dr. David Sandweiss, instructor in clinical medicine, and M. H. F. Friedman, Ph.D., research associate in physiology, with rank of instructor, will be in direct charge of the work, while Thomas L. Patterson, Ph.D., will supervise the research. General investigations of peptic ulcer conducted during the past two years by the department of surgery will be continued in collaboration with the new work.

Personal.—Dr. Alexander W. Blain, Detroit, formerly president of the Wayne County Medical Society, has been appointed to the state commission of conservation.——Governor Dickinson has appointed Dr. Henry Allen Moyer, Charlotte, his personal physician, to the state service in the capacity of medical secretary, it was reported.——Dr. Charles R. Smith, formerly on the staff of the William H. Maybury Sanatorium, Northville, has been appointed medical superintendent of the Cooper Country Sanatorium, Houghton, succeeding Dr. George

McL. Waldie, resigned.——The library of the late Dr. Stephen H. Knight, Detroit, has been donated to the Wayne County Medical Society by his son Rufus.

Outbreak of Smallpox.—Newspapers reported April 12 that sixteen basketball teams were involved in an outbreak of smallpox while playing in a tournament in Mount Pleasant recently. The sixteen competing teams represented schools at Flushing, Alma, Sandusky, Evart, Perrinton, Gladwin, Lake City, West Branch, Carson City, Mecosta, Alabaster, Roscommon, Weidman, Crystal, Fowler and Mount Pleasant. In addition to the areas threatened by outbreaks directly related to the Mount Pleasant tournament, many other counties have been reporting smallpox cases, it was reported. Up to April 12, 192 cases had been reported throughout the state, constituting one of the greatest smallpox threats in recent years. For one month prior to this report seventeen counties reported seventy-one cases; these counties included Roscommon, Gratiot, Mecosta, Montcalm, Osceola, Muskegon, Allegan, Isabella, Cass, Genesee, Gladwin, Hillsdale, Midland, Missaukee, Ottawa, Presque Isle and Shiawassee. The state department of health secured six graduate physicians from the University of Michigan School of Hygiene and Public Health to assist local authorities in those counties having no full time health departments, it was stated.

MINNESOTA

Personal.—Dr. Gerald Taylor Evans, assistant professor of physiological chemistry, Yale University, New Haven, Conn., has been appointed associate professor of medicine and director of chemical and metabolic laboratories at the University Hospital, University of Minnesota. Dr. Evans graduated at McGill University Faculty of Medicine, Montreal, in 1932; he received his degree of doctor of philosophy from the University of Pennsylvania in 1937.

Society News.—Dr. Jesse G. M. Bullowa, New York, delivered the annual address before the Minnesota Pathological Society April 18 on "Specific Treatment of the Pneumococcic Pneumonias." The society was recently addressed by Drs. James S. McCartney, Minneapolis, on "Relation of Age and Site of Operation to Postoperative Pulmonary Embolism" and Fred G. Kolouch, Schuyler, Neb., "Role of the Lymphocytes in Acute Inflammation."——Recent meetings of the Scott-Carver County Medical Society were addressed in Shakopee and Minneapolis respectively by Drs. Edgar W. Bedford, Minneapolis, on "Clinical Aspects of Gallbladder Disease"; Ames W. Naslund, St. Paul, on "X-Ray Diagnosis in Gallbladder Disease"; Carl O. Rice, Minneapolis, "Indications for Surgery of the Thyroid Gland" and Chauncey N. Borman, Minneapolis, "X-Ray Measurements of the Female Pelvis."——Dr. Kenneth A. Phelps, Minneapolis, presented a paper before the Minnesota Academy of Medicine, St. Paul, April 12 entitled "Early Cancer of the Larynx."

MISSOURI

Society News.—Dr. Harold E. Petersen, St. Joseph, discussed pyelitis before the Buchanan County Medical Society recently.——The St. Louis Medical Society held a round table discussion on arthritis April 21 with Dr. Ralph A. Kinsella as the leader; one on delayed operation in acute peritonitis following ruptured appendicitis was held May 5 with Dr. Robert Elman as the leader.

Medal to Dr. Jacobsen.—Carlyle F. Jacobsen, Ph.D., professor of medical psychology, Washington University School of Medicine, St. Louis, was presented with the Howard Crosby Warren Medal at the annual dinner of the Society of Experimental Psychologists in Princeton, N. J., April 2. According to the New York *Times*, the medal was awarded for Dr. Jacobsen's "Description of the Functions of the Frontal Lobes of the Brain."

Personal.—Dr. William F. McCarthy has been appointed health officer of Jackson County, according to the *Weekly Bulletin* of the Jackson County Medical Society. Dr. McCarthy is attending the Graduate School of Public Health Administration of the University of Michigan, Ann Arbor.——Dr. Felix Deutsch, a member of the faculty of the University of Vienna from 1919 to 1935, has been made associate professor of psychosomatic medicine at the Washington University School of Medicine, St. Louis.

Health Department to Reorganize.—Full authority was given to Dr. Edwin H. Schorer, director of the Kansas City Health Department, April 27, "to clean out politics from the city health department," according to the Kansas City *Star*. Mayor Smith at the same time recognized the leadership of the Jackson County Medical Society in any move to revamp the health department. He asked Dr. Schorer to assemble a committee of doctors from the society at once to work with the health director "in reorganizing the health department 'along efficient lines and with no political strings attached—none whatsoever.'"

NEW JERSEY

New Officers of State Medical Board.—New appointments to the New Jersey State Board of Medical Examiners include those of Dr. Samuel Barbash, Atlantic City, A. Stanley Myers, D.C., Jersey City, and Dr. John H. Rowland, New Brunswick, succeeding Dr. Henry B. Diverty, Woodbury, Walter Seth Kipnis, Ph.D., West New York, and the late Dr. William E. Darnall, Atlantic City.

NEW YORK

State Medical Election.—Dr. James H. Borrell, Buffalo, was chosen president-elect of the Medical Society of the State of New York at its annual meeting in Syracuse April 25, and Dr. Terry M. Townsend, New York, was installed as president. Other officers include Drs. Aaron Sobel, Poughkeepsie, second vice president, and Peter Irving, New York, secretary. The 1940 annual session will be held in Buffalo.

Hospital Named in Honor of Physician.—Dedication ceremonies were held April 20 to mark the renaming of the Buffalo City Hospital as the Edward J. Meyer Memorial Hospital. The late Dr. Meyer was for many years president of the hospital board. Kenneth Goodner, Ph.D., of the Rockefeller Institute for Medical Research, New York, was the guest speaker, discussing newer aspects of pneumonia. Other speakers included Drs. Carlton E. Wertz, who reviewed the life of Dr. Meyer; Dr. Abraham H. Aaron on the relationship between the hospital and the University of Buffalo; Chancellor Samuel P. Capen of the university, Dr. Herbert H. Bauckus and Commissioner Thomas W. H. Jeacock of the county department of social welfare. The ceremonies were under the auspices of the Medical Society of the County of Erie, the Buffalo Academy of Medicine and the consulting, visiting and resident staffs of the hospital.

New York City

Eighth Harvey Lecture.—Dr. Albert Szent-Gyorgyi, professor of medical chemistry, University of Szeged, Hungary, delivered the eighth Harvey Lecture of the current series at the New York Academy of Medicine May 18. His subject was "Biological Oxidation and Vitamins."

Goat's Milk.—About 150 milch goats are supplying the demand for goat's milk in the city, according to New York *Medical Week*. The three dairies furnishing the milk operate under a permit from the city department of health. Although goat's milk is popular in Europe, only approximately 250 quarts of it are consumed in the city every day, it was stated. Each of the three goat dairies produces certified milk, and one of them also produced pasteurized milk.

Retiring Members of Rockefeller Staff.—Five members of the Rockefeller Institute for Medical Research are retiring from active work, having reached or passed the age of 65 years. They are Drs. Alexis Carrel, who announced his retirement last year, Florence R. Sabin, who retired early this year; Karl Landsteiner, Phoebus A. Levene and Winthrop J. V. Osterhout, Ph.D. According to *Science*, the mandatory retirement rule is being enforced in all organizations with which the Rockefeller foundations are connected. It is stated that pensions will be given and that every laboratory facility will be provided to enable those who retire to continue their research work on their own responsibility if they care to do so.

Exhibit Presented to Army Museum.—The anatomical collection assembled by the late Dr. George Sumner Huntington, for many years professor of anatomy at Columbia University College of Physicians and Surgeons, has been presented by the medical school to the Army Medical Museum, Washington, D. C. This is said to be the largest collection in the United States and was formerly used in teaching. When the medical school was in its old location at Fifty-Ninth Street, the collection was viewed by many visitors, but in recent years lack of space at the new Medical Center has made an exhibit impossible, it was said. For this reason it was decided to transfer it to the Army museum, where it will be available for students from all parts of the world.

Society News.—At a joint meeting of the Medical Society of the County of Kings and Academy of Medicine of Brooklyn, April 18, Murray J. Shear, Ph.D., and Dr. Stanley P. Reimann, Philadelphia, discussed "Experimental Aspects of Carcinogenic Substances" and tumor grading, respectively.—— The Brooklyn Thoracic Society was addressed April 21 by Drs. Edgar Mayer on diagnosis of early pulmonary tuberculosis and Paul Geary, "The Operation of Extrapleural Pneumothorax." —— A symposium on the treatment of peripheral vascular disease was presented at a meeting of the New York Academy of Medicine May 4 by Drs. Irving Sherwood Wright, Edgar V. Allen, Rochester, Minn., and Reginald H. Smithwick, Boston. Drs. James C. White, Boston, and Beverly Chew Smith discussed the papers. —— Dr. Smiley Blanton, among others, addressed the New York Neurological Society at a joint meeting with the section of neurology and psychiatry May 2 on "Psychiatric Study of Some Miraculous Cures at Lourdes."

NORTH CAROLINA

Plaque in Honor of Dr. McBrayer. — A plaque was unveiled April 19 in the auditorium of the state tuberculosis sanatorium, Sanatorium, in honor of the late Dr. Louis B. McBrayer. Dr. Paul H. Ringer, Asheville, was the principal speaker. Dr. McBrayer served for twenty-one years as secretary of the Medical Society of the State of North Carolina and at one time as president; he was president of the Southern Conference on Tuberculosis 1925-1926, managing director of the North Carolina Tuberculosis Association, 1915-1937, and superintendent of the state tuberculosis sanatorium at Sanatorium, 1914-1924.

OHIO

Dr. Krogh Gives Hanna Lecture.—Dr. August Krogh, professor and director of the Zoophysiological Laboratory, University of Copenhagen, Denmark, delivered the forty-fourth Hanna Lecture at the Institute of Pathology, Cleveland, May 5. His subject was "The Regulation of the Circulation as Observed in Changes of Posture in Man."

Director of Social Hygiene Society Appointed. — Dr. Richard W. Weiser, medical director of public schools in Kenmore, N. Y., has been appointed executive secretary of the Cincinnati Social Hygiene Society to succeed Dr. Carl A. Wilzbach, who recently became city health commissioner. Dr. Weiser received his medical degree at the University of Pennsylvania School of Medicine, Philadelphia, in 1927. He has been with the Kenmore school system for six years.

Society News.—Dr. Charles E. Kiely, Cincinnati, among others, addressed the Adams County Medical Society April 19 in West Union on "Dementia Praecox and Its Treatment." ——Drs. Frederick G. Maurer and Melvin A. Mulvania, Lima, addressed the Henry County Medical Society April 11 in Napoleon on "Clinical Aspects of the Common Cardiac Arrhythmias" and "Hemorrhage in Pregnancy" respectively. ——Dr. John A. Malcolm, Pittsburgh, addressed the Columbiana County Medical Society in Lisbon April 11 on "Neurasthenia and Recent Advances in Neurology."

PENNSYLVANIA

Society News.—Drs. Russell L. Haden and James A. Dickson, Cleveland, discussed medical and surgical aspects, respectively, of arthritis at a meeting of the Westmoreland County Medical Society April 27 at the Mountain View Hotel near Greensburg.——Dr. John A. Kolmer, Philadelphia, addressed the Blair County Medical Society, Altoona, April 25, on "Immunology of Anterior Poliomyelitis." —— Dr. Joseph A. Hepp, Pittsburgh, addressed the Fayette County Medical Society in Uniontown May 4 on "Endocrine Treatment of Menstrual Disorders."

Philadelphia

Portrait Presented.—The senior class of Jefferson Medical College presented a portrait of Dr. Frank Crozer Knowles, professor of dermatology, to the college April 28. The portrait was painted by Frederick Gill, Philadelphia artist. Dr. Knowles, who graduated from the University of Pennsylvania in 1902, has been professor of dermatology at Jefferson since 1919.

Course in Internal Medicine.—The Pennsylvania Hospital announces a general course in internal medicine for graduate physicians to be given June 5-23. Lecturers will be Drs. William D. Stroud, on cardiology; Lawrence S. Carey, gastroenterology; David L. Farley, hematology; Burgess L. Gordon, diseases of the lung; Norman P. Shumway, diseases of the kidney; Garfield G. Duncan, metabolism; John T. Bauer will conduct pathologic conferences and Paul A. Bishop, roentgen ray conferences. The fee is $100.

WEST VIRGINIA

Interstate Meeting. — The Greenbrier Interstate Medical and Surgical Society held its first meeting at the Greenbrier Hotel, White Sulphur Springs, April 17. The speakers were Drs. Marvin Pierce Rucker, Richmond, on "Further Experience with Knotless Sutures in Immediate Perineorrhaphy"; John M. T. Finney Jr., Baltimore, "Developments in the Study and Care of Patients Suffering with Appendicitis," and Louis George Herrmann, "Practical Aspects of Circulatory Disturbances in Extremities." This meeting was the first of neighboring medical societies in Virginia and West Virginia.

WYOMING

Lectures on Pediatrics. — A series of postgraduate lectures on pediatrics will be presented throughout Wyoming May 22-June 9 by Dr. Clifford D. Sweet, chief of staff at the Children's Hospital of the East Bay, Oakland. The series is part of a plan for postgraduate work for Wyoming physicians in obstetrics and pediatrics, approved at the annual meeting of the Wyoming State Medical Society in August 1938.

GENERAL

Prize Awarded for Pellagra Cure.—Conrad Arnold Elvehjem, Ph.D., since 1936 professor of agricultural chemistry, University of Wisconsin, Madison, was awarded a prize of $1,000 at the closing meeting of the American Institute of Nutrition in Toronto April 26 for his discovery that nicotinic acid would cure pellagra. Dr. Elvehjem was born in McFarland, Wis., in 1901.

Meeting of Surgeons.—The third annual assembly of the International College of Surgeons will be held at the Hotel Roosevelt, New York, May 21-25. The program includes many speakers from the United States and other countries. At the banquet, Tuesday evening, the speakers will include Gen. Dr. F. C. Najera, ambassador from Mexico to the United States, Major Vouvier, and Dr. Max Thorek, Chicago.

Rheumatism and Arthritis.—An editorial committee of the American Rheumatism Association, headed by Dr. Philip S. Hench, Mayo Clinic, Rochester, Minn., has published the fifth rheumatism review of American and English literature on "rheumatism." This review assembles in one place most of the references on the subject and contains numerous editorial and critical comments by its compilers. The review appeared in the January and February issues of the *Annals of Internal Medicine* and is also available in reprint form from the secretary of the American Rheumatism Association, Dr. Loring T. Swaim, Boston.

Society News.—The eleventh annual meeting of the Aero Medical Association will be held at the Hollywood Beach Hotel, Miami, November 3-5. —— The twenty-second annual meeting of the American Dietetic Association will be held at the Hotel Ambassador in Los Angeles August 27-31; the speakers will include Agnes Faye Morgan, Ph.D., University of California, on "The Dietitian's Place in the Hospital Research Program"; E. Neige Todhunter, Ph.D., State College of Washington, "The Newer Knowledge of Vitamin C in Health and Diseases," and Dr. Albert H. Rowe, Oakland, "Allergy."——The American Society of X-Ray Technicians will hold its fourteenth annual meeting at the McAlpin Hotel, New York, June 27-30.

Special Society Elections. — Mr. John O. Steel, Pine Bluff, Ark., was installed as president of the Mid-West Hospital Association at its annual meeting in Hot Springs National Park. Dr. Herbert A. Black, Pueblo, Colo., was chosen president-elect. The association includes the states of Arkansas, Colorado, Kansas, Missouri and Oklahoma.——Frank B. Jewett, Ph.D., president, Bell Telephone Laboratories, New York, was elected president of the National Academy of Sciences at its annual meeting in Washington April 26, succeeding Frank R. Lillie, Ph.D., Chicago. Frederick E. Wright, Ph.D., of the geophysical laboratory of the Carnegie Institu-

tion, Washington, was reelected home secretary.——Dr. Fred Kuhlman, St. Paul, Minn., was elected president of the American Association on Mental Deficiency at its annual meeting at the Palmer House May 6. Other officers include Meta A. Post, Ph.D., Newark, N. J., vice president, and Dr. E. Arthur Whitney, Elwyn, Pa., secretary-treasurer. The 1940 meeting will be held in May in Atlantic City.

Research on Problems of Alcohol.—The recently organized Research Council on Problems of Alcohol has issued a report outlining its program of research as it has been developed at present. It will be the policy of the council to conduct research, to arrive at conclusions based on research, to present the facts in suitable form to interested groups and to encourage intelligent discussion of the facts, according to the statement. It will not arrive at conclusions based on unscientific assumptions, engage in propaganda, lobby for liquor control laws or participate in political campaigns. The following problems have been selected for study and some of them assigned as indicated:

A critical survey of the conclusions to date of all significant studies regarding the effects of alcohol on the individual.

Polyneuritis and Korsakoff's psychosis in the alcohol addict, to be conducted by Bellevue Hospital, New York.

Toxic factors in alcoholism, to be conducted by the New York Psychiatric Institute.

A critical survey of all studies completed and under way which deal with the relation of alcohol to traffic accidents.

The role of alcohol in liver cirrhosis, to be conducted by Bellevue Hospital.

Psychological factors in deterioration and recovery in cases of acute alcoholism and alcoholic psychosis.

Research will be conducted in three fields: the effects of alcohol on the individual, the effects of alcohol on society and the effectiveness of industrial and legal control. Accompanying the research program will be a program of education in four fields; schools and colleges, community leaders and the adult population, manufacturers and distributors of alcoholic beverages, law enactment and law enforcement agencies. Harry H. Moore, Ph.D., is director of the council, which has headquarters in the R. C. A. Building, New York.

Osteopathy Vetoed in New York.—On May 10, Governor Herbert H. Lehman of New York vetoed a bill which would have permitted licensed osteopaths to use instruments for minor surgical work, as well as use anesthetics, antiseptics, narcotics and biologic products. In a message explaining his action, the governor wrote:

To the Assembly:

There has been great misunderstanding with regard to this bill. Many people apparently believe that the practice of osteopathy as now carried on depends on my approval of the bill. This, of course, is completely contrary to the facts.

Any persons now licensed or hereafter licensed as doctors of osteopathy are, regardless of my action on the bill, permitted to render exactly the same services as in the past. Their authority to carry on the functions now performed is in no way curtailed or abridged.

VALUE OF OSTEOPATHY CONCEDED

There is no question as to the substantial value and usefulness of osteopathy. This is generally conceded and recognized. This bill would, however, give all licensed osteopaths broad additional powers. It would permit all licensed osteopaths to use instruments for minor surgical procedures, to administer anesthetics and antiseptics, and to prescribe narcotics and biological products.

The additional authority now asked by the osteopaths may be far-reaching in its effect. A minor operation, if not properly performed, I am advised, may be more serious in its effect upon the patient than some of the so-called important operations.

The administering of drugs and biologicals where there is not sufficient training and experience with regard to their effect on the patients may lead to serious ill effects.

Undoubtedly many of the persons now licensed to practice osteopathy in this State have had broad training and experience in matters relating to medicine and surgery. On the other hand, many of the osteopaths practicing in this State were licensed prior to the setting of the present high standards of training and have had little or no later experience in medicine or surgery.

LICENSING METHODS RECALLED

In addition, a very substantial number of the osteopaths now practicing in this State receive their licenses not through examinations within the State but by endorsement of licenses granted to them in other States. Some of them are graduates of osteopathic schools which are no longer recognized by our board.

In my opinion legislation should provide that applicants for licenses and those who already hold licenses as osteopaths but who now desire additional powers should be required to satisfy the Board of Regents either by submitted credentials or by examination that they have had the proper instruction and training in surgical procedure and drug therapy to justify the granting of the additional powers set forth in this bill.

In this way the Regents would be able to determine those who are actually qualified to use instruments for minor surgical procedures, to administer anesthetics and antiseptics and to prescribe narcotics and biological products. The difficulty of providing for such determination by the Board of Regents does not seem to me great.

The bill is disapproved.

HERBERT H. LEHMAN.

CANADA

Society News.—Dr. Ralph M. Waters, Madison, Wis., addressed the Academy of Medicine of Toronto April 4 on "The Development of Anesthesiology." Dr. Joseph Brennemann, Chicago, addressed the academy recently on "Acute Abdominal Conditions in Childhood." Dr. Eric Miles Atkinson, New York, addressed a combined meeting of the sections on otolaryngology and neurology and psychiatry recently on "Localized Nonsuppurative Encephalitis Resulting from an Adjacent Focus of Infection—Some Pathological and Clinical Considerations."——Dr. John H. MacDermot, Vancouver, delivered the annual Osler Lecture of the Vancouver Medical Association March 7 on "The Layman and the Doctors."

Summer School Clinics.—The Vancouver Medical Association will hold its annual summer school clinics June 6-9; participants will include:

Dr. Leighton C. Conn, professor of obstetrics and gynecology, University of Alberta Faculty of Medicine, Edmonton.

Dr. Emile F. Holman, professor of surgery, Stanford University School of Medicine, San Francisco.

Dr. Charles P. L. Mathe, San Francisco.

Dr. Frank R. Menne, professor of pathology, University of Oregon Medical School, Portland.

Dr. Dwight L. Wilbur, associate clinical professor of medicine, Stanford University School of Medicine, San Francisco.

Further information may be obtained from Dr. William W. Simpson, secretary, 203 Medical-Dental Building, Vancouver, B. C.

Medical Research Facilities in Canada.—The National Research Council of Canada recently made a survey of medical research facilities in the Dominion. A conclusion was reached that immediate attention should be given to tuberculosis and rheumatic diseases. Projects are to be initiated in a number of institutions. In the field of cancer research the committee decided to aid the work on standardization of dosage which has been undertaken in cooperation with the National Physical Laboratory in England and the National Bureau of Standards in Washington, D. C., making use of high voltage equipment in the National Research Laboratories at Ottawa. The committee also proposed to aid in developing research in various institutions throughout Canada, and these institutions have been invited to undertake work under the auspices of the committee of which Sir Frederick Banting, Toronto, is chairman.

FOREIGN

Congress on Medical Hydrology.—The sixteenth International Congress on Medical Hydrology, Climatology and Geology will be held at the Strasbourg Faculty of Medicine October 8-11. Information may be obtained from M. le Prof. Vaucher, Institut d'Hydrologie et de Climatologie, 1 place de l'Hôpital, Strasbourg.

Societies Merge to Form Faculty of Radiologists.—The British Association of Radiologists and the Society of Radiotherapists of Great Britain have joined to form the Faculty of Radiologists, according to *Radiology*. The work of the new organization will be carried on at the old office of the British Association of Radiologists, 32 Welbeck Street, London, W.1.

Society News.—The National Association for the Prevention of Tuberculosis of Great Britain will be held in Belfast, Ireland, June 29 to July 1. The subjects for discussion will be "Problems of Organization and Local Administration of Tuberculosis Schemes"; "Tuberculosis in the Adolescent" and "Architectural Problems in Connection with Tuberculosis Institutions."——The German Roentgen Society will hold its annual meeting in Stuttgart May 24-27.

Congress on Industrial Medicine.—The second "Journées Internationales de Pathologie et d'Organisation du Travail" is to be held in Paris under the patronage of government officials and with the cooperation of various medical and industrial organizations. The program lists the following subjects of reports to be presented: "Hygienic Conditions in Soldering Works"; "Etiology and Pathogenesis of Occupational Dermatitis"; "Various Systems of Compensation for Occupational Disease" and "Toxicologic Study of the Principal Constituents of Special Kinds of Steel." There will be many visits to industrial plants and to hospitals. The languages of the congress will be German, English, Spanish, French and Italian. All correspondence should be addressed to the president of the congress at the Institut Medico-Legal, Place Mazas, Paris XII. Dr. Guy Hausser is the secretary in charge of organizing the congress.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 22, 1939.

Thomas's Splint in War Surgery

In lectures on the treatment of war wounds, delivered at the British Postgraduate Medical School, Col. J. M. Weddell of the Army Medical Corps stated that the army relied on the large-ringed Thomas splint in the evacuation of the majority of fracture patients from the front line to the casualty clearing station. The splint is applied over the boot and clothing, and the ring is packed anteriorly and laterally with tow or wool to retain it against the tuber ischii. The fracture is supported with Gooch splinting or Cramer's wire. Extension is obtained by means of a skewer through the waist of the boot or a clove-hitch, around the ankle, tied to the distal end of the splint. The splint is suspended to a bar fitting over the stretcher. Many modifications of Thomas's splint have been suggested, such as collapsible splints and half-ringed splints. Colonel Weddell had the opportunity of discussing a number of points with a committee composed of four members of the council of the Royal College of Surgeons. It was agreed that for the evacuation of casualties the original Thomas model was the most satisfactory. As one member said, "A Thomas splint altered is a Thomas splint spoiled."

It was agreed that internal traction by pins and wires was unsafe unless first class asepsis could be assured. Thus skeletal traction in dressing stations was ruled out and probably also in casualty clearing stations from which patients are evacuated by train. Plaster of paris in the form of supporting slabs would be of great use in casualty clearing stations, but encircling compound fractures with circular plaster bandages was dangerous in the early stages. Extensive use should be made of blood transfusions, and blood stored in refrigerators should be used in dressing stations. Drip transfusion would be of great use in casualty clearing stations. Advanced operating units were not advised, as it would be better to get the patients to the casualty clearing stations, where they could be operated on and nursed under better conditions. Patients would not stand evacuation well after serious operations. Gas and oxygen was the best anesthetic for serious operations, but it involved the use of heavy, cumbersome cylinders, to supply which might be difficult. For many operations ether should be the standard anesthetic. Barbiturates and spinal anesthesia were dangerous for patients already in a condition of shock.

In the great war the introduction by Sir Robert Jones of the use of Thomas's splint for the transport of patients with gunshot fractures of the femur greatly reduced the mortality from these fractures. The observation made that Thomas's splints are so perfect that attempts to improve them have only the opposite effect is not new. The passage of time has only increased Thomas's reputation, while it almost uniformly dims the reputation of men famous in their day. During his life Thomas received little recognition. When the American orthopedist John Ridlon visited the English clinics he found that the surgeons did not have a good word for Thomas, but of him he wrote the great epitaph "He did more good new things for orthopedics than all the rest since Hippocrates."

Prolapsed Intervertebral Disk

At the Royal Society of Medicine Dr. J. Grafton Love of the Mayo Clinic opened a discussion of prolapsed intervertebral disk. The typical finding at operation was edema of the posterior nerve root in the affected segment. The prolapse was relatively uncommon, though Dr. Love was able to give statistics of 300 cases. It was three times commoner in men than in women and the average age at the time of operation was 40 years, but this was no true indication of the age of onset of symptoms, of which there was a long history in many cases. The greatest incidence was in the lumbar region, the fourth and fifth disks being those liable to be affected, thus accounting for the dominant symptom, sciatica. Thirty-seven per cent of the patients gave a history of injury immediately preceding the onset of symptoms. Nocturnal pain was an important symptom, as were exacerbations on coughing and sneezing. The achilles jerk was absent. Examination showed spasm of the erector spinae and obliteration of the lumbar curve. The total protein in the cerebrospinal fluid was increased, and in two thirds of the cases radiographic examination with iodized oil revealed narrowing of the canal. The treatment was laminectomy with removal of the protruding cartilage, which gave gratifying results.

The neurologist Dr. C. P. Symonds had experience of twenty-two cases, in which the pressure was on the cord in fifteen and on the cauda equina in seven. He discussed the differential diagnosis from other conditions, such as tumors. Important features were the relation of the pain to injury and its exacerbation by coughing and spinal movements. Remission of symptoms was noteworthy. Patients in whom the lumbar part of the spine was affected showed pain in the lower part of the back, related to effort and posture. Elsberg had stated that the posterior columns were spared in the sensory loss that might ensue, but Symonds had found that this did not hold in seven of his cases. Spinal tumors were distinguished by the fact that on the whole the sequence of events suggested anterior compression, while prolapsed disk caused posterior compression. Disseminated sclerosis, with its well known remission of symptoms, might give rise to difficulty of differential diagnosis. The question of sciatica presented difficulty, for his experience of sciatica was that patients eventually recovered, whatever the treatment. How many sciatic patients with prolapsed disk recovered with rest alone before the days of diagnosis of the cause?

Mr. Julian Taylor said that three types of pain were caused by prolapsed disk: (1) pain in the vertebrae, (2) pain referred from the vertebrae and (3) pain referred from the nerve pinched. The last was the most persistent. From his operative experience he rejected the theory of hernia of the nucleus pulposus. The substance removed was white necrotic material. One of his patients, a heavy man, hurt his back in a turn with professional acrobats. They threw him in the air and caught him at their feet. Extreme kyphosis developed.

Evacuation of the London School Children

If the latest development of "civilized warfare," the bombing of crowded cities, should occur in this country, it has been arranged to spare children as far as possible. Plans complete to the last detail for the stupendous task of evacuating the school children of London have been issued to the heads of the schools in a circular of 5,000 words. As many as 1,300,000 children and the persons accompanying them will need to be moved out in organized parties in a short time. The children will be accompanied by their teachers and when under 5 years by their mothers or other responsible persons. Blind persons and expectant mothers will be removed at the same time. The government has made a survey of the accommodations available in the reception areas, which shows that there will be no scarcity of homes where the householders are willing to look after the children. In an emergency two messages will be sent to the schools. When the first, "Get ready for evacuation," is received head teachers will notify all assistant teachers and helpers. The second message will give the date of evacuation, and each school will then form a unit or school party. The children will march to the train in squads of fifty. Divisional officers have been appointed for the quick settlement of local problems. They will be responsible for the local planning of routes to the

entraining stations and arranging the order in which schools will be entrained. The children will carry a change of clothing, night attire, toilet requisites, sufficient food for the day and their gas masks. It will not be possible to take at the same time children who are sick at home or who are so crippled that they cannot walk.

PARIS

(From a Special Correspondent)

April 15, 1939.

Alcoholism

It is estimated that the annual expenditure by the French on their apéritifs and small drinks is 6 billion francs. A committee of the Académie de médecine has been charged to formulate recommendations and to submit to the public authorities the resolutions that sociologists, biologists and physicians regard as indispensable. Strict enforcement of existing laws is demanded, especially those which concern the number of drinking shops and the hours during which alcohol may be sold. Moreover, an important reduction of their number and their closing under certain circumstances such as strikes and elections are asked. These representations allow one to understand the role that politics plays in the spread of alcoholism.

The Société médicale des hôpitaux of Lyons insists on the prohibition of drinks of high alcoholic content and the sale of alcohol in glasses. It believes that tax reductions should be allowed drink shops that do not sell alcohol, that habitual drunkards should be denied permits to manage such places and the benefit of insurance protection and that drunkenness should no longer be regarded as an attenuating circumstance by courts; in short, that an intensive campaign should be undertaken against this social danger.

The French Population

France had 36,000,000 inhabitants in 1850. She has 42,000,000 today, but one must deduct 2,500,000 aliens. In 1850 there were only 400,000 aliens. Italy, England and Germany have doubled their population while France has grown by only one tenth. In 1851 three Frenchmen lived in the country to one in the city. Today more people live in the city than in the country and one eighth of the French population lives in Paris and its outskirts.

This exodus from country to town coincided with the lowering of the birth rate. Although the number of marriages remains stationary, that of children per marriage is rapidly falling. The difficulty is that French women either no longer can or no longer want to bear children. German family life faced the same situation for twenty-five years, until Hitler ordered economic measures, which have fully succeeded. At present German families in which the mother's age ranges from 20 to 24 years have twice as many living children as French families in similar situations.

The remedies proposed by Moine, who presented extensive evidence of this situation before the Académie de médecine, aim at establishing an economic and financial equilibrium between large families, homes without children and single men and women, since half of the French homes entrust to the others the care of maintaining the population level. It is not a question of penalties but solely of establishing a reasonable balance between those who rear children and those who do not.

Vitamins in the Prevention of Pellagra

The pathogenesis of aphthae is unknown. Professor Cachera at a reunion of the Société médicale des hôpitaux of Paris reported satisfactory results from the administration of nicotinic amines and nicotinic acid in the treatment of this disease. Cure took place in a few days in several cases in which the condition had been refractory to other treatments. The speaker wondered whether aphthae is an atypical form of pellagra. It is possible that the satisfactory results induced by administering liver extract in the treatment of aphthae may be due to the nicotinic acid amines present in the extract. Boule reported satisfactory results from the administration of nicotinic acid in a case of coproporphyrinuria. The patient was suffering from cirrhosis without ascites, hepatic insufficiency, local melanoderma, cerebral symptoms and colic spasm. Nicotinic acid induces rapid improvement of the general condition of the patient and rapid disappearance of porphyrinuria. This case suggests a possible connection between aphthae and pellagra in their relation to avitaminosis.

Electrofluoroscopy

Lian and Minot presented at the Société médicale des hôpitaux of Paris a fluoroscopic electrocardiograph which solves the difficulty of taking a film through the photographic tray and waiting for the negative before seeing how the heart functions. This apparatus makes it possible to see electrocardiograms and electrokymograms instantaneously. There remain some distortions to suppress, caused by the powerful amplifier used for transmission.

Lian and Minot used a cylindric screen, moved at uniform speed, in front of the oscillograph. Besides, the use of a mechanical oscillator, instead of a cathodic oscillograph, permits the use of an amplifier of small power. The recording consequently is continuous and regular and the period of phosphorescence long enough for observation. The apparatus consists of a large cylinder, its evolution measuring 1 meter, with the time marked on it. This cylinder turns in front of the luminous spot or spots and thus are made the electrocardiographic and kymographic tracings. The frequencies and amplitudes are faithfully reproduced. An interesting phase of the tracing may be preserved either by diverting the current toward the regular electrocardiogram or else by placing a piece of sensitized paper over the place of interest on the screen; the remaining light will be strong enough to leave an impression of the image on the emulsion.

The apparatus is simple and inexpensive. Its uses are manifold. It is possible to get an electrocardiogram for guidance in diagnosing at the bedside of the patient and to follow on the fluorescent screen the immediate effects of a medicament or to keep a patient during narcosis or childbirth under constant control. It may be most useful for psychologic experiments; the encephalographic tracing is drawn at will before the eye of the experimenter.

Anniversary of the Pasteur Institute

At the fiftieth anniversary of the founding of the Pasteur Institute most of the speakers preferred to arrange a program in which the students and former associates of Pasteur exhibited the results of their activity. Among these, Prof. M. L. Martin, present director of the institute, described Pasteur's methods and technics, in which he had been a direct collaborator. Prof. Gaston Ramon gave a summary of a fifty year old achievement of Pasteur, the fight against diphtheria. This was an occasion to defend anatoxin against recent attacks. Prof. Pasteur Vallery-Radot concluded the commemoration by reviewing the activity of Pasteur institutes in the struggle against social scourges, not only in French colonies but in many other countries.

Spanish Refugees

After Franco's victory, 200,000 Republican soldiers, of whom 12,000 were wounded, and 160,000 civilians took refuge in France, crossing the Pyrenees by eastern mountain passes. It was necessary to distribute this population quickly in different regions of France but, first of all, to isolate the infectious.

Delousing, cleaning and vaccination were done for this throng, which arrived like a rushing tide in complete disorder. A large number had been exposed to typhus.

Besides government and army physicians, many civilian physicians offered their services, as did the infirmaries of the Red Cross. Packets were requisitioned and transformed into floating hospitals. Three hundred of the 12,000 wounded died. The duty of according refuge was discharged in a satisfactory manner.

BERLIN

(From Our Regular Correspondent)

March 27, 1939.

News of the Universities

Of significance since the report on the universities in THE JOURNAL January 28, page 347, was the first conference of university presidents of Greater Germany, held early in March in Berlin at the invitation of the department of education for the reich. It is significant that the presidents of the German university at Prague, of the technical schools in Brünn and Danzig and of the Herder Institute at Riga participated. Minister of State Dr. Wacker, of the department of education, said that the time has arrived for the carrying out of all the reforms necessary to the organization of a common German university. Statewide unity has at last been attained in building up the German university system and German scholarship. Especially important are student enrolment in the universities, teaching personnel and plans for the German university system.

STUDENT ENROLMENT

The student enrolment for professions requiring an academic education is scarcely smaller than, for example, in 1911-1914 (68,000 students today compared with 72,000 at that time). However, the question assumes a different slant if the economic and military demands are taken into consideration. The decrease in the birth rate, the losses incurred in the World War and the elimination of Jews from the academic professions will become noticeable. There will be a shortage of about 30,000 engineers in 1942. Now there is need of 15,000 enrolments for callings that require an academic training. In the next few years an annual shortage of at least 8,000 graduates will have to be reckoned with. The number of college graduates eligible for university studies will fall from 36,000 in the current year to 32,000 in 1940 and probably to 27,000 in 1941. Specific data regarding the enrolment of medical students have not become known. Remedies must be sought. However, the quality of German students and of German scholarship may not be lowered.

TEACHING PERSONNEL

The law just passed regarding the salaries of university teachers establishes the economic security of those of the rank of instructor (dozent). This was a national necessity, for thereby scholarship, which is the greatest asset of German culture, can be furthered. It is hoped that in this way the danger of losing potential university material has been removed. The type of instructor who has no definite income in spite of reaching his fortieth year must disappear forever. Stipends and teaching assignments are not sufficient to insure a steady succession of teachers at the universities. To promote academic scholarship, university teachers must be relieved of financial worries.

PLANS FOR THE GERMAN UNIVERSITY

With the rise of new branches of learning the universities have largely lost the university concept and ideal of "universitas litterarum" that was valid in the last century. Born of specialized needs, specialized schools of higher learning have arisen. However, it is necessary to limit the number of training centers for specialized sciences and to concentrate them in a few universities. Furthermore, the assignment of functions among the individual universities is to be carried out according to a plan, the tradition of the individual university being taken into consideration. In Berlin a model university is being planned, in which the unity of German scholarship characteristic of the third reich is to be comprehensively represented. However, not even in Berlin are all the specialized sciences to be taught, but rather the fundamental subjects which compose the "universitas," namely, the humanities, jurisprudence and political science, medicine and the pure and applied sciences. These are the subjects that belong to the corporate whole of a university and to that of a technical school of higher learning.

UNIVERSITY SALARIES

The new law on the salaries of university teachers gives an insight into university life. It is the first governmental law of its kind. Until now the administration of the universities was subject to the individual German states. Although the incomes of teachers were fairly uniform, there were differences which frequently provided inducements when positions were to be filled. The basic salaries of full professors ranged between 6,900 and 14,000 marks, the average being about 11,000 marks. To this was added money for rent and various other items. Associate professors received a minimum salary of from 4,400 to 6,000 marks and a maximum of about 7,800 to 10,500 marks. Salaries in Prussia were somewhat higher. Special regulations governed the incomes in special cases for directors of institutes. Some states reserved the right to make exceptions in behalf of distinguished men whom they wanted to secure.

The new law creates a uniform basis for the entire country, inclusive of Austria and the Sudetenland. Full professors are to receive a basic salary of from 7,500 to 11,600 marks and, in special cases, as much as 13,600 marks; associate professors, from 5,700 to 9,000 marks, with a maximum of 11,600. Besides, both classes of teachers are to receive a share of the fees paid for their lectures. A definite income from course fees is guaranteed, the minimum being 1,000 and the maximum 7,000 marks. Provision has been made to grant further additions in special cases "to secure and retain excellent teaching ability." Presidents and deans receive special grants.

A new feature of the law is that now young instructors receive a definite salary of from 3,400 to 7,500 marks from the time of their appointment, together with compensation for rent. Previously "assistance" was granted only for two years and had to be accompanied by a statement of productive scholarship and also of financial circumstances. Besides, the leader of the instructors' club, whose position was political, had to give his opinion. "Assistance" could be withdrawn whenever this local officer regarded it fitting. The provisional phases of the salary system are now removed. Young instructors are thoroughly examined as to their political belief before they are admitted. The new law is a step toward the goal of a uniform law governing the university teachers of the country.

POLITICAL VERSUS ACADEMIC EDUCATION

Studentenführer Dr. Scheel said in February that nothing is more senseless than to assume that a political education is a hindrance to specialized academic training. Any one who thinks so neither has learned from history nor understands the nature of the present constructive program in Germany. The teacher who has no interest in politics is not wanted, for only by basing his specialized knowledge on the unity of Nazi philosophy can he attain his highest professional success. Great importance is attached to working together with the academic youth of other countries. For this reason efforts are made to enable every student to study abroad. The leadership of the universities must constitute a bridge to carry German ideas to other nations.

FOREIGN STUDY

Last year the question of studying abroad led to diplomatic inquiries. The foreign bureau of the student leadership requested students to consider Swiss universities for the summer semester of 1939, advising that two semesters spent in Switzerland would receive full credit. Aid was available to needy students and to those especially willing to volunteer. The condition attached to the offer required these students to take part first in Germany in the "labor association Switzerland," a special form of a Nazi training course for students who go abroad. The words "especially willing to volunteer" led to diplomatic steps by the Swiss government, with a request for elucidation, and an explanation was given.

GERMAN CLINICS IN PRAGUE

What happened in the German clinics in Prague was reported in THE JOURNAL January 7, page 72. For a time the plan was to remove the German schools of higher learning in Prague to the Sudetenland. This plan was not carried out. The winter semester was opened at the German university in Prague January 11, after a delay of two months caused by political events, under the leadership of the Nazi student body. Almost all Jewish students have been removed. The number of students at the German university (there is also a Czech university in Prague) is 3,000 instead of the former 5,000. The decrease is due in part to the elimination of Jews and in part to labor conscription and military service, which young Sudeten Germans must now undergo as members of the German reich. In the summer semester the complete reorganization of these two schools of higher learning after the pattern of the German universities is to become effective.

PALESTINE

(From Our Regular Correspondent)

Tel-Aviv, April 21, 1939.

Medical Refugees in Palestine

The rise of Hitlerism produced profound repercussions on the status of Jewish physicians in Germany. Their exodus, however, was by no means as sudden as that of their colleagues in Austria after its annexation to the German reich. When the great wave of German doctors came to Palestine in 1933 the Workers' Health Insurance Fund, like the rest of the Jewish community, enjoyed comparative prosperity. From 1933 to 1939 the number of physicians was increased from eighty to 312, of whom 138 were of German origin, twenty-nine from Austria and sixty-five from various other countries.

The Austrian physicians arriving during the past year have found the country in a disturbed rather than in a prosperous state. The highly specialized character of their training and the impossibility of transferring their capital have made their rehabilitation in a new country difficult. As but few new openings were available, physicians were sent temporarily to posts hitherto held by laymen, for which medical training is desirable but not necessary, such as those of assistants in laboratories and x-ray institutes and inspectors of sanitation in rural settlements.

Docent Rudolph Strisower has been appointed consultant to the Diagnostic Committee, which examines difficult cases at the Tel-Aviv Central Dispensary. Dr. Strisower was awarded many honors for his services as bacteriologist and epidemiologist in the Austrian army during the World War. After the armistice he entered the Vienna Infirmary and General Hospital as assistant to the specialist for diseases of the heart and blood vessels Professor Pal and later worked with Professor Wenckebach.

Docent Robert Lenk is in charge of x-ray work in the Kupat-Holim Hospital at Afoula and in its central dispensary in Haifa. He has published eighty-seven scientific papers and was director of the Roentgen Institute of the Vienna Workers' Sick Fund from 1928 to 1938.

Dr. Ernest Spira, who has had wide experience in orthopedic surgery in Prague, Vienna and Leipzig, is now working as orthopedic surgeon in the Tel-Aviv Central Dispensary.

Dr. Aria Rappaport, chemist and bacteriologist of the Vienna Hygiene Institute, has been added to the staff of the Beilinson Hospital.

Dr. Erich Nassau has been appointed chief of the pediatrics department at the Emek Hospital and inspector of children's institutions in the Valley of Jezreel. He is joint author with Prof. L. F. Mayer of a textbook on children's nutrition, was in charge of the pediatrics department of the Berlin Municipal Hospital and was director of a sanatorium for children with chronic diseases.

Dr. Karl Kawalek, who has been appointed resident gynecologist at the Emek Hospital, has had wide experience in this field as assistant to Professor Lorenz, Professor Novak and Docent Hidler.

Dr. Otto Tetzner, now consultant in pediatrics in the Tel-Aviv Central Dispensary, was first assistant in Professor Knoepfelmacher's children's clinic from 1920 to 1927 and thereafter pediatrician for the Vienna Workers' Sick Fund.

Prof. Walter Strauss was formerly professor of hygiene at the Berlin University and permanent adviser to the Hygiene Section of the League of Nations. In this capacity he was sent to various countries to investigate the effect of climatic conditions on work and fatigue. He has already been of inestimable assistance to Kupat Holim in the investigation of rural hygiene and sanitation problems. During an epidemic of typhoid in the Jordan Valley at Afikim a committee of experts, including Professor Strauss, was able by immediate action to check its spread. The committee flew by plane, as the roads were not safe for travel, and laboratory equipment was immediately sent to them. Invaluable aid was rendered by the government department of health, which made room for all patients in the government hospital at Haifa. Professor Strauss has recently been appointed hygienic adviser to the Industrial Hygiene Committee of the General Federation of Labor (Histadruth) in Palestine.

Prof. Bernhard Gottlieb, professor of dentistry of Vienna, is now consultant to the Tel-Aviv Dental Dispensaries. He is an honorary member of the British Royal Society, of the Allied Dental Council of America and of many other honorary societies in various countries. He has made important contributions to the etiology and treatment of pyorrhea, root canal work and other fields. He has already published the first part of his forthcoming book on dentistry in individual phases, the treatment of root canals.

Physicians entering the Kupat-Holim service regardless of their previous merits and standards have shown a willingness to adapt themselves to conditions in the country. They have been ready to supplement their European medical education by a special study of local endemic diseases. They have been ready to acquire a new language as well as to understand the physician-patient relationship in a workers' cooperative medical organization. This specific training has been provided in the clinics and hospitals of the organization, and their first appointment frequently finds them in rural dispensaries and even in labor camps in dangerous sections of the country.

The Hadassah Medical Organization has extended similar aid both by direct appointments and by offering facilities for study, observation and training in its hospitals and clinics.

During the past three years twenty-four physicians from Germany, Austria and latterly Italy have been appointed by Hadassah to its hospitals and affiliated departments. Among these is Prof. Enrico Emilio Franco, formerly head of the department of anatomy and histologic pathology at the Royal University of Pisa. Another recent appointment is that of Docent F. Mandel, author of 183 scientific papers, former assis-

tant in the Vienna General Infirmary and latterly head of the surgery department of the Canning-Childs Hospital.

New refugees are daily appearing. Among those who are known for their scientific work abroad and are not yet affiliated with medical institutions is the biochemist Prof. Harry Schaeffer, professor of internal medicine at the University of Breslau until 1933 and thereafter head of the department of internal medicine of the Breslau Jewish Hospital.

The following eminent physicians have taken up their residence in Palestine: the gynecologist Prof. Bernhard Zondek, the internists Prof. Hermann Zondek, Prof. S. G. Zondek, Docent Kleberg, Dr. Heller, Dr. Lewkowitz, Professor Citron and Professor Minz, the entomologist and helminthologist Prof. S. Adler, the pediatricians Prof. L. F. Mayer and Professor Rosenbaum, the radiologist Professor Halberstatter, the neurologist Professor Pappenheim and the gynecologist Professor Schonholtz.

The problem of assisting medical refugees is daily assuming larger proportions as letters continue to pour in from Jewish physicians in Italy and Czechoslovakia, Poland and Rumania.

The New Haifa Government Hospital

The new government hospital was officially opened by High Commissioner Sir Harold McMichael Dec. 22, 1938. This hospital, of 230 beds, is one of the largest in the country. The buildings are beautifully located on a site overlooking the Haifa Bay and the Carmel Range. They comprise (1) a main block of six stories containing wards and nurses' quarters, medical officers' quarters and kitchen and dining rooms, all facing the prevailing summer winds from the northwest but avoiding the sun's rays in the summer; (2) an operation, outpatient x-ray and laboratory block of three stories, also facing northwest but separated from the main building by a causeway to enhance free circulation of air from north to west; (3) an admission block, containing first aid rooms, offices and a pharmacy under the causeway; (4) a service block at ground level and a basement containing laundry, disinfection quarters, mortuary, chapel, garages and staff quarters, and (5) five one story isolation pavilions, separated from the main hospital, for patients with infectious diseases.

The hospital is open to all communities to the limit of its capacity. In addition to surgical, medical and maternity patients, it provides for all patients with the more serious infectious diseases from the town and districts of Haifa, Acre and Nazareth and in case of need even further north.

Medical Department of the Jewish National and University Library

The Jewish National and University Library, the largest in the Near East, with 350,000 volumes, owes its existence to the Russian physician Dr. Chasanowitch, who more than forty years ago conceived the idea of a Jewish National Library in Jerusalem. His collection formed the nucleus of the present university library.

It was the insight and the devotion of the American physician Dr. Julius Jarcho which transformed the medical department of the university library into an institution of vital importance for the medical progress of the country. For fifteen years Dr. Jarcho has not only been devoting himself to the development of the library but has succeeded in enlisting the aid and interest of a wide circle of friends and colleagues in America. Since 1925 hundreds of the most important periodicals and thousands of recent medical works have been sent to the library by the American Jewish Physicians' Committee, under the presidency of Dr. Nathan Ratnoff and with the active support of Dr. Emanuel Libman.

Apart from these extensive contributions, mention should be made of the large ophthalmic library donated by Professor Deutschmann, the collection of the Nobel Prize winner Barani, the collections of dental works sent by Drs. Wachtel, Misch and Kantorowitsch and the works on the history of medicine donated by Professor Libman and Dr. Friedenwald. The medical department now contains approximately 36,000 volumes and some 3,000 antiquated or less important works. Two hundred and fifty current periodicals are displayed in its reading room, and five branch libraries are being maintained by it in various parts of the country.

In 1929, the collections of the library were transferred to the new library building on Mount Scopus. In order to meet the requirements of physicians practicing in town, a reading room for periodicals and a reference library of some 1,200 volumes was established in the Nathan Straus Health Center and later in the Hadassah Hospital. Branch libraries have been opened by the medical department in Tel-Aviv, Haifa, Afoula, Tiberias and Petah-Tikva.

THE NETHERLANDS

(From Our Regular Correspondent)

Feb. 16, 1939.

International Congress of Malariology

At the International Congress of Malariology, held in the grand auditorium of the Institut Colonial, the minister of colonies and a representative of Queen Wilhelmina were present. Inaugural addresses were delivered by Professors Snyders, Grijns and Swellengrebel and Minister Welter. Some 500 physicians from Europe, Africa, America, the British Indies and the Netherlands Indies attended. The program included 114 reports on deficiency diseases, filarioses, yellow fever, antiplague vaccination, Leptospira, Trypanosoma, Glossina, Rickettsia, rabies and paludism.

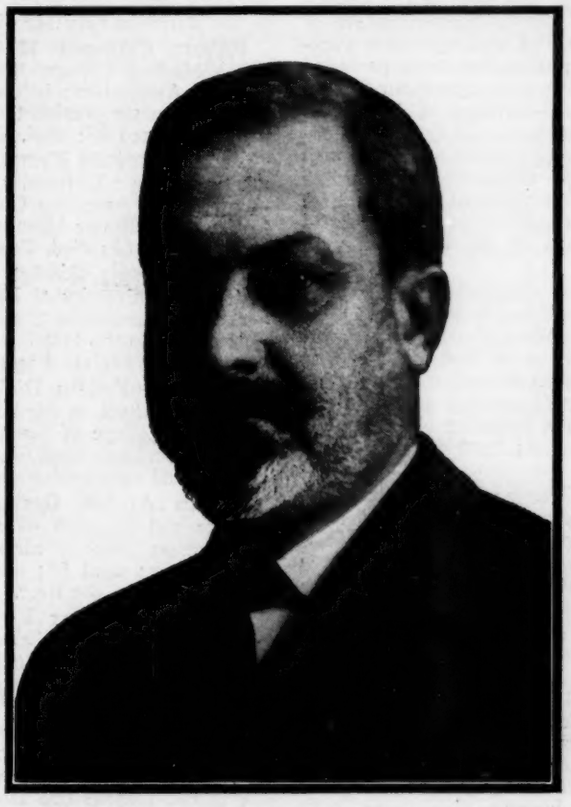
The pathogenesis of filarioses was discussed by J. Rodhain. The penetration of the human organism by infectious larval filariae does not seem to be accompanied by any appreciable reaction, general or local. The eosinophilia of the blood which usually ensues seems to be independent of external clinical manifestations. The pathogenesis of the clinical symptoms remains obscure. Some of the morbid signs related to filariosis may be attributed to local irritation provoked by adult filariae, others to indirect reactions of an allergic or toxic nature, and still others to the presence of larval filariae. G. F. Stefanopoulo discussed recent advances in yellow fever research. The diagnosis of yellow fever has become possible through the application of serologic methods (the protection test), histopathologic methods (viscerotomy) and observation of the virus (inoculation of the monkey and the white mouse). The homogeneity of the amaril virus has been established. An exact delimitation of the zones of yellow fever on both continents has been made and, what is more, the presence of the virus, in the absence of Stegomyia, has been demonstrated in the South American jungle. The methods of prophylaxis have become more numerous. Anti-amaril vaccination can now be considered an effective preventive measure; the discovery of the attenuated virus by culture of embryonal tissues has made possible mass immunizations of populations which could not be protected by any other known means. The systematic fight against Stegomyia has produced such favorable results that campaigns of this sort are now felt to be imperative for the protection of urban populations.

Georges Lavier, discussing the antiglossina campaign, said that an effective campaign against Glossina in a particular region cannot be initiated without a sound knowledge of the character and biology of the local species. Major measures are directed against the vegetation considered to be the breeding place of Glossina. Minor measures include the capture of the flies by means of nets or traps. Biologic prophylaxis envisages the utilization as parasites on the pupa of creatures that prey on Glossina.

Deaths

Alexander Lambert ✠ President of the American Medical Association 1919-1920, died in New York at the Doctors' Hospital May 9, aged 77. Dr. Lambert was born in New York Dec. 15, 1861, the son of Dr. Edward W. and Martha W. Lambert. He received his bachelor of arts degree from Yale University in 1884, the bachelor of philosophy degree in 1885 and the M.D. degree from the College of Physicians and Surgeons of Columbia University in 1888. The bachelor of philosophy degree was in association with research under Dr. Russell H. Chittenden. After two years of study in Europe, Dr. Lambert was associated with Dr. T. Mitchell Prudden and Dr. William H. Park in the investigation of tetanus and diphtheria antitoxin. Early in his career he began teaching, becoming professor of clinical medicine at Cornell University Medical College, holding that position from 1898 to 1931. He was also assistant bacteriologist in the New York Department of Health from 1894 to 1901 and attending physician in Bellevue Hospital from 1894 to 1933.

Throughout his career Dr. Lambert took great interest in the work of organized medicine, serving as president of the Medical Society of the State of New York, as a member of the House of Delegates of the American Medical Association in 1911, third vice president in 1909. He was appointed a member of the Judicial Council in 1911 and became chairman in 1912, holding that position until his election to the position of President-Elect in 1918. He was also chairman of the Section on Practice of Medicine 1903-1904. He served in New York City on the Mayor's Committee on Narcotic Addiction in 1927 and as a member of a state commission on the same subject. His memberships in medical societies included the Association of American Physicians, the Harvey Society, the American Association for the Advancement of Science, the American Heart Association and several other local medical bodies. In 1917 he was appointed a Major in the Medical Corps and sent to France, where he remained until the Armistice, serving in France also as medical head of the American Red Cross.



ALEXANDER LAMBERT, M.D., 1861-1939

Early in his career he became closely associated with former President Theodore Roosevelt, acting for many years as his personal physician and also accompanying him on hunting and fishing trips. In 1919, following the death of Theodore Roosevelt, Dr. Lambert became the director of the Roosevelt Memorial Association. Dr. Lambert is also credited with having been instrumental in maintaining Gen. William C. Gorgas as director of the sanitary work during the building of the Panama Canal after an attack had been made on the work of General Gorgas by some of the lay officials in charge of the building of the Canal.

Throughout his career Dr. Lambert gave special attention to problems of alcoholic and narcotic addiction and to diseases of the heart. He was the author of numerous contributions to medical periodical literature dealing with these subjects. Dr. Lambert was widely known as a distinguished leader in the field of medicine, as an inspiring organizer and as an influential physician.

Richard Clarke Cabot ✠ widely known as a physician, teacher and author, died in Boston, May 8, after a long illness. Dr. Cabot was born in Brookline, Mass., the son of James Elliott Cabot and Elizabeth Dwight Cabot, on May 21, 1868. His father was an overseer of Harvard University and was noted as the biographer of Ralph Waldo Emerson. After graduation from Harvard in 1889, where he won honors in the classics and in philosophy and election to Phi Beta Kappa, Dr. Cabot continued his studies in Harvard Medical School and graduated in 1892. He became assistant in medicine in Harvard Medical School in 1899, instructor in 1903, assistant professor in 1908, professor in 1918 and, since 1933, has been professor emeritus.

Dr. Cabot's interest in ethics and philosophy persisted throughout his life; he lectured on logic in Harvard in 1903, and was appointed professor of social ethics in 1920, holding that position until 1934.

As part of his medical career, Dr. Cabot became physician to the Outpatient Department of the Massachusetts General Hospital in 1898, and was also consultant in the Massachusetts General Hospital, New England Hospital for Women, the Westboro School for Boys, the Lancaster School for Girls, the Brockton Hospital and the Sturdy Memorial Hospital of Attleboro. He was also a former visiting physician to the Channing Home, consulting physician to the Massachusetts Eye and Ear Infirmary and chief of staff at the Mount Sinai Hospital.

During the World War, Dr. Cabot served as a major in the Medical Corps at a Bordeaux base hospital, remaining there from July 1917 to February 1919, except for a period of five months when he was associated with the Red Cross Service in Paris. He was commissioned Lieutenant Colonel Nov. 6, 1918, and honorably discharged in February 1919.

As for the social side of his interests, he was president of the National Conference of Social Work in 1931 and president of the Massachusetts Anti-Saloon League in 1931-1933; he was awarded the gold medal by the National Institute of Social Science in 1931.

The University of Rochester bestowed on him the LL.D. degree in 1930, and Syracuse University awarded him the L.H.D. degree in 1934.

In the American Medical Association, Dr. Cabot was chairman of the Section on Practice of Medicine from 1904 to 1905 and a member of the House of Delegates in 1907 and in 1915.

Early in his career, Dr. Cabot attracted wide public attention by his attitudes in relationship to the social aspects of medical care. In 1913, he pointed out that there were far too many doctors, and urged reorganization of medicine for group practice, with the suggestion that, since the University of California had been able to provide students with medical care for $5 a year, it should be possible to do the same for all people. He was also widely noted for the statement that out of 400 diseases only seven were curable by drugs and five by inoculations. Moreover, his statement to the effect that the vast majority of diagnoses were wrong as based on the results of postmortem examinations, made many years ago, was repeatedly quoted in the press.

Perhaps Dr. Cabot was most widely known for writings, particularly in the field of social welfare. These publications included "Social Service and the Art of Healing," 1909; "What Men Live By," 1914; "The Rewards and Training of a Physician," 1917; "Social Work," 1919; "Adventures on the Borderlands of Ethics," 1926; "The Meaning of Right and Wrong," 1933, and "Christianity and Sex," 1937. Particularly known to the medical profession are his writings in medicine, including "Clinical Examination of the Blood," 1896, of which five editions were issued, and his work on "Physical Diagnosis," 1901, of which ten editions were issued. Well known also were his books on "Case Teaching in Medicine," 1906, reprinted in more recent years in a special series in the *New England Journal of Medicine*, and "Differential Diagnosis," 1911. His last public appearance was in the New York Herald Tribune Forum, 1938.

Dr. Cabot will long be remembered for his philosophy and as a leader in stimulating social habits of thought.

Frank Parsons Norbury ⊕ Jacksonville, Ill.; Long Island College Hospital, Brooklyn, 1888; secretary of the Section of Neurology and Medical Jurisprudence, 1893-1894, and member of the House of Delegates of the American Medical Association in 1904; past president of the Morgan County Medical Society; fellow of the American College of Physicians and member of the American Psychiatric Association; past president and secretary of the Mississippi Valley Medical Association; professor of internal medicine, St. Louis College of Physicians and Surgeons, 1895-1896, and professor of nervous and mental diseases, Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1904-1908; alienist, state board of administration, 1911-1913; superintendent of the Kankakee (Ill.) State Hospital, 1909-1911; acting medical director of the National Committee for Mental Hygiene during the World War; president and medical director of the Norbury Sanitarium; aged 75; died, March 14, of coronary thrombosis.

Noble Murray Eberhart ⊕ Chicago; Bennett Medical College, Chicago, 1894; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; director of the x-ray laboratory and head of the department of physiological therapeutics, Loyola University School of Medicine, 1911-1913, and professor of electrophysics, Post-Graduate Medical School, 1902-1905; at various times professor and head of the department of electrotherapy, American College of Medicine and Surgery, Medical Department of Valparaiso University, and Chicago College of Medicine and Surgery, Medical Department of Valparaiso University; president of the North Shore Branch, 1912-1913, and member of the Council, Chicago Medical Society, 1913-1915; author of "Manual of High Frequency Currents," which passed through eight editions; aged 68; died, February 9, of epithelioma of the left hand with metastasis.

Jose Guillermo Lewis, Colon, Republic of Panama; Georgetown University School of Medicine, Washington, D. C., 1923; member of the Medical Association of the Isthmian Canal Zone; fellow of the American College of Surgeons; at one time instructor of surgery at his alma mater; formerly chief surgeon and chief of staff, Eastern Dispensary and Casualty Hospital; chief of the surgical service, including obstetrics and gynecology, Amador Guerrero Hospital; aged 40; died, February 12.

Samuel Robert Slaymaker ⊕ Chicago; Rush Medical College, Chicago, 1892; clinical professor of medicine at his alma mater; past president of the Chicago Society of Internal Medicine; president and attending physician to the Washington Boulevard Hospital; associate attending physician to the Presbyterian Hospital; for many years on the attending staff of the Cook County Hospital; served during the World War; aged 74; died, May 3, of carcinoma of the pancreas.

George Charles Kreutz, Detroit; Washington University School of Medicine, St. Louis, 1924; member of the Michigan State Medical Society and American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; surgeon in charge, division of otolaryngology, Henry Ford Hospital; aged 42; died, February 1, of pulmonary embolus following an operation for hernia.

Joseph Thompson McKinney ⊕ Roanoke, Va.; Medical College of Virginia, Richmond, 1912; member of the American Roentgen Ray Society, Radiological Society of North America and the American College of Radiology; served during the World War; on the staff of the Lewis-Gale Hospital; aged 49; died, February 3, of carcinoma of the prostate with metastasis to the liver and lungs.

Paul Eugene Lineback, Emory University, Ga.; Drake University Medical Department, Des Moines, Iowa, 1911; professor of micro-anatomy and neuro-anatomy at the Emory University School of Medicine; fellow of the American College of Physicians; member of the American Association of Anatomists; co-author of "Anatomy of the Rhesus Monkey"; aged 59; died, February 28.

George Goodhue ⊕ Dayton, Ohio; Dartmouth Medical School, Hanover, N. H., 1880; University of the City of New York Medical Department, 1880; past president of the Montgomery County Medical Society; fellow of the American College of Surgeons; formerly health officer; consulting surgeon to the Miami Valley Hospital; aged 85; died, February 25.

Stephen H. Knight ⊕ Detroit; New York Homeopathic Medical College, New York, 1886; fellow of the American College of Surgeons; at one time assistant professor of surgery at the Detroit College of Medicine and Surgery; for many years on the staff of the Grace Hospital; aged 76; died, February 9, of arteriosclerotic heart disease.

Page D. Barlow, McMechen, W. Va.; Baltimore Medical College, 1895; member of the West Virginia State Medical Association; past president of the Marshall County Medical Society; aged 65; on the staff of the Reynolds Memorial Hospital, Glendale, where he died, February 23, of diabetes mellitus and lobar pneumonia.

Frank Wallace Curtis, Stewartsville, N. J.; Long Island College Hospital, Brooklyn, 1892; member of the Medical Society of New Jersey; on the staff of the Easton (Pa.) Hospital; aged 73; died, February 9, in the King's Daughters' Hospital, Portsmouth, Va., of cerebral hemorrhage and hemiplegia.

Thomas J. Farley, Amherstdale, W. Va.; University of Louisville (Ky.) Medical Department, 1913; member of the West Virginia State Medical Association; formerly county health officer; aged 54; died, February 18, in the Mercy Hospital, Logan, following an operation for a ruptured appendix.

Harry Cullen Kariher, Champaign, Ill.; Rush Medical College, Chicago, 1903; member of the Illinois State Medical Society; past president of the Champaign County Medical Society; served during the World War; aged 59; on the staff of the Burnham City Hospital, where he died, February 5.

Robert Caldwell McChord, Lebanon, Ky.; Louisville (Ky.) Medical College, 1875; member of the Kentucky State Medical Association; fellow of the American College of Surgeons; formerly president of the board of education and bank president; aged 87; died, February 19, of arteriosclerosis.

Robert Christie Kemp, Baton Rouge, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1900; fellow of the American College of Surgeons; visiting surgeon to the Baton Rouge Hospital and Our Lady of the Lake Sanitarium; aged 65; died, February 19, of pneumonia.

Gaston Louis Gaudet, Lutcher, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1904; member of the Louisiana State Medical Society; aged 59; died, February 7, in the Hotel Dieu, Sisters' Hospital, New Orleans, of auricular fibrillation and pleurisy with effusion.

James McFaddin Dick ⊕ Salisbury, Md.; University of Maryland School of Medicine, Baltimore, 1895; fellow of the American College of Surgeons; on the staff of the Peninsula General Hospital; aged 67; died, February 17, of cerebral hemorrhage and arteriosclerosis.

Edwin Archer Gerhart, Seattle; Hahnemann Medical College and Hospital of Philadelphia, 1901; member of the Washington State Medical Association; served during the World War; aged 60; died, February 28, in a local hospital of carcinoma of the liver.

Vernon Sylvester Fildes, Olney, Ill.; Washington University School of Medicine, St. Louis, 1905; member of the Illinois State Medical Society; aged 57; died, February 4, in the Olney Sanitarium, of bronchopneumonia and cerebral hemorrhage.

Walter Pearre, Waynesboro, Pa.; Bellevue Hospital Medical College, New York, 1884; Hahnemann Medical College and Hospital of Philadelphia, 1885; aged 77; died, January 16, at the Waynesboro Hospital, of gastric ulcer with pyloric stenosis.

Richard Lodwick Gray, Clayton, N. Y.; Bellevue Hospital Medical College, New York, 1898; member of the Medical Society of the State of New York; aged 68; died, January 28, of carcinoma of the urinary bladder with metastases to the breast.

James M. Fenton, Baltimore; University of Virginia Department of Medicine, Charlottesville, 1894; member of the Medical Society of Virginia; formerly coroner of the central district; aged 70; died, February 17, of cardiac decompensation.

Frederick Yingling Allen, St. Petersburg, Fla.; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1898; formerly associate professor of histology at his alma mater; aged 65; died, February 26.

Francis Earle Briggs, Ludlow, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; member of the Illinois State Medical Society; aged 56; died, February 2, of carcinoma of the stomach.

William Clarkson Waggoner, New York; Miami Medical College, Cincinnati, 1903; formerly on the faculty of the Long Island College Hospital, Brooklyn; served during the World War; aged 57; died, January 27, in Ossining.

Daniel James Leo Harrington ⊕ Boston; Tufts College Medical School, Boston, 1910; on the staffs of the Boston City Hospital and the Carney Hospital; aged 52; died, February 20, in St. Francis Hospital, Miami Beach, Fla.

Martin Cole, Hainesville, N. J.; Harvard University Medical School, Boston, 1873; aged 89; died, February 25, in the Newton (N. J.) Memorial Hospital, of chronic myocarditis and fracture of the hip received in a fall on the grass.

William Edgar Fahrney ✦ Broadway, Va.; University of Maryland School of Medicine, Baltimore, 1897; aged 65; died, February 13, at the University Hospital, Charlottesville, of arteriosclerosis, cerebral thrombosis and pneumonia.

Clarence Kelsay, Evansville, Ind.; University of Pennsylvania Department of Medicine, Philadelphia, 1898; on the staff of the Protestant Deaconess Hospital; aged 62; died, February 8, of pneumonia with hypertension.

Joseph Hall Jones, Baltimore; University of Alabama School of Medicine, 1912; served during the World War; acting assistant surgeon, U. S. Public Health Service; aged 52; died, February 20, of coronary thrombosis.

James Francis Bowen, Hinsdale, Mass.; University of Vermont College of Medicine, Burlington, 1911; served during the World War; aged 60; died, February 21, in St. Luke's Hospital, Pittsfield, of cerebral hemorrhage.

Edward Daniel Hartnett, Boston; Harvard University Medical School, Boston, 1898; member of the Massachusetts Medical Society; served during the World War; aged 64; died, February 13, of cerebral hemorrhage.

James Asbury Harper ✦ Greenfield, Iowa; Bellevue Hospital Medical College, New York, 1896; formerly secretary of the Adair County Medical Society; aged 71; died, February 9, of arteriosclerosis and coronary occlusion.

Thomas Archibold McIntyre, Colorado Springs, Colo.; Gross Medical College, Denver, 1902; member of the Colorado State Medical Society; on the staff of St. Francis Hospital; aged 52; died, January 24, of diphtheria.

Marcus S. Lemlich, Brooklyn; New York Medical College and Flower Hospital, New York, 1914; on the staffs of the Unity Hospital and the Cumberland Hospital; aged 52; died, January 18, in the Mount Sinai Hospital.

Frank G. Emerson, Wellington, Kan.; State University of Iowa College of Medicine, Iowa City, 1885; member of the Kansas Medical Society; aged 78; died, February 12, of an injury received in a fall in a bathtub.

Alfred M. Houston ✦ Joliet, Ill.; Hahnemann Medical College and Hospital, Chicago, 1904; on the staffs of the Silver Cross Hospital and St. Joseph's Hospital; aged 63; died, February 9, of sarcoma of the maxilla.

Mecislaus Stanley Kreda, National Military Home, Ohio; Wayne University College of Medicine, Detroit, 1933; on the staff of the Veterans Administration Facility; aged 35; died, February 21, of pulmonary embolism.

Rudolph J. Maas ✦ Houghton, Mich.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1880; formerly on the staff of St. Joseph's Hospital, Hancock; aged 83; died, February 7, of acute coronary disease.

John I. McCormick, Yazoo City, Miss.; Jefferson Medical College of Philadelphia, 1899; member of the Mississippi State Medical Association; on the staff of the King's Daughters Hospital; aged 67; died, January 23.

Joseph H. McGauhey ✦ White Cloud, Kan.; Missouri Medical College, St. Louis, 1888; bank president; formerly member of the school board; aged 77; died, February 8, in St. Joseph's Hospital, St. Joseph, Mo.

Ira Lincoln Fetterhoff, Baltimore; University of Maryland School of Medicine, Baltimore, 1885; Hahnemann Medical College and Hospital of Philadelphia, 1886; aged 74; died, February 25, of diabetes mellitus.

Sheldon S. De Lancey, Williamsport, Ind.; Hahnemann Medical College and Hospital, Chicago, 1882; member of the Indiana State Medical Association; county health officer; aged 78; died, February 7, of senility.

Bruce D. Campbell, Dearborn, Mich.; Detroit College of Medicine and Surgery, 1915; chief physician and surgeon of hospitals of the Ford Motor Company's plants; aged 45; died, March 20, of heart disease.

George Benjamin Hulburd, Jericho, Vt.; University of Vermont College of Medicine, Burlington, 1885; member of the Vermont State Medical Society; aged 77; died, February 4, of carcinoma of the rectum.

Earle McEwen ✦ Mason City, Iowa; Hahnemann Medical College and Hospital, Chicago, 1881; past president of the Cerro Gordo County Medical Society; aged 81; died, February 17, of coronary thrombosis.

Christopher C. Gray, Batesville, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1888; member of the Arkansas Medical Society; aged 79; died, February 17, of hypostatic pneumonia.

Joseph B. Kepler Evans, McGuffey, Ohio; American Eclectic Medical College, Cincinnati, 1889; member of the Ohio State Medical Association; aged 74; died, February 10, of pulmonary tuberculosis.

Alford Comer Knight, Jacksonville, Fla.; Medical College of the State of South Carolina, Charleston, 1911; member of the Florida Medical Association; formerly a pharmacist; aged 63; died, February 11.

Willard Blossom Segur ✦ Ware, Mass.; Dartmouth Medical School, Hanover, N. H., 1892; on the staff of the Mary Lane Hospital; aged 73; died, January 27, in the Deaconess Hospital, Boston.

Oscar Newton Lightner, Laredo, Texas; Washington University School of Medicine, St. Louis, 1905; served during the World War; aged 57; died, February 13, in the Nix Hospital, San Antonio.

Wladimir Feodor de Niedman, Los Altos, Calif.; Howard University College of Medicine, Washington, D. C., 1884; veteran of the Spanish-American War; aged 84; died in January in San Francisco.

James Perry Houston, Traverse City, Mich.; Chicago Medical College, 1889; member of the Michigan State Medical Society; aged 78; died, February 27, in the Grand Traverse County Hospital.

Silas Offen Witherbee, Middletown, Ky.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1867; formerly bank president; aged 92; died, January 2.

Septimus Jordan, Richburg, S. C.; Medical College of the State of South Carolina, Charleston, 1911; member of the South Carolina Medical Association; aged 51; died, February 15, of arthritis.

James Thomas Justice, Kernersville, N. C.; North Carolina Medical College, Davidson, 1904; for many years member of the school board; aged 65; died, February 15, of carcinoma of the prostate.

Henry Eben Hunt, Roodhouse, Ill.; Northwestern University Medical School, Chicago, 1896; aged 66; died, February 8, in Our Saviour's Hospital, Jacksonville, of carcinoma of the rectum.

Charles Holt Forbes, Athol, Mass.; New York Homeopathic Medical College, New York, 1883; aged 79; died, February 7, in the Massachusetts Masonic Hospital, Shrewsbury, of myocarditis.

B. Clinton Marsh, Livingston, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1886; member of the State Medical Association of Texas; aged 78; died, February 22.

Joseph Anton Denkinger, Brookline, Mass.; Vermont Medical College, Rutland, 1889; aged 76; died, February 27, in Boston of diabetes mellitus, cerebral arteriosclerosis and chronic myocarditis.

Marriages

EDWARD DUNNER, Brooklyn, to Miss Reichel Connor of Pittston, Pa., March 19.

JAMES L. SEIBOLD to Miss Margareate Stewart, both of Birmingham, Ala., April 29.

THOMAS E. BRADLEY to Miss Evelyn Mashburn, both of Fitzgerald, Ga., in April.

JOSEPH A. HESCH, Aldan, Pa., to Miss Marie B. McGowan of Philadelphia, April 29.

THOMAS Y. DORWART to Miss Ellen Vaughn, both of Lexington, Neb., February 14.

BENJAMIN HARTWELL BOYD JR. to Miss Margaret McCarty, both of Atlanta, Ga., April 29.

JOSEPH HELMS FARROW, New York, to Miss Florence Skinner of Kansas City, Mo., April 28.

JOHN GOODRICH SMITH, Rocky Mount, N. C., to Miss Mary Lillian Wagner of Warrenton, April 25.

WILLIAM EDGAR WADDELL, Lexington, Va., to Miss Joan Thompson of St. Johns, Newfoundland, recently.

DANIEL O'CONNELL SAYERS, Waterbury, Conn., to Miss Mary Adams Oliver of Mount Olive, N. C., in Goldsboro, N. C., in April.

Bureau of Investigation

SIXTH LABEL FOR LYDIA E. PINKHAM'S VEGETABLE COMPOUND FINALLY BARES FORMULA

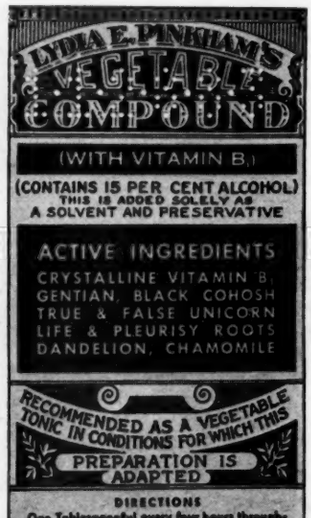
Actual Ingredients Exposed for the First Time

The Bureau of Investigation called attention to a new label for "Lydia E. Pinkham's Vegetable Compound" in THE JOURNAL Dec. 17, 1938. The label which was discussed at that time indicated that a new ingredient—vitamin B_1—had been added and that the name of the preparation had been changed to "Lydia E. Pinkham's Vegetable Compound (With Vitamin B_1)." This label is reproduced here, along with an even newer label on which the active ingredients are listed.

The previous article discussed whether or not vitamin B_1 was indicated in any appreciable percentage of those who took this preparation. At the same time attention was called to the fact that there was probably nothing harmful in its addition to the Compound. Nevertheless it is a question whether or not a preparation containing 15 per cent alcohol would be useful to persons deficient in vitamin B_1 and who might take this remedy for the purpose of obtaining additional vitamin B_1.

In the previous article four older labels for this preparation were reproduced. The first label appeared before the enactment of the Food and Drugs Act of 1906, as amended, on which the preparation was claimed to be "A Sure Cure for Prolapsus Uteri, or Falling of the Womb, and All Female Weaknesses." The next three labels comprised modifications of this claim in accordance with the act of 1906. In the first of these the phrase "A Sure Cure" was deleted. In the second this wording was replaced by the phrase "Recommended for the Treatment of Non-Surgical Cases of Weaknesses and Disorders of the Female Generative Organs, Catarrhal Leucorrhea and Irritation." The final label which was issued under the act of 1906 merely contained the statement that the preparation was "Recommended as a Vegetable Tonic in Conditions for Which This Preparation is Adapted." As Dr. Arthur J. Cramp pointed out in an article in *Hygeia* "This statement is about as informative as it would be to say that 'For Those Who Like This Sort of Thing, This Is the Sort of Thing That Those People Like.'"

LYDIA E. PINKHAM'S
VEGETABLE
COMPOUND
(WITH VITAMIN B1)
(CONTAINS 15 PER CENT ALCOHOL)
THIS IS ADDED SOLELY AS A SOLVENT AND PRESERVATIVE
RECOMMENDED AS A VEGETABLE TONIC IN CONDITIONS FOR WHICH THIS PREPARATION IS ADAPTED
SHAKE THE BOTTLE BEFORE USING
PREPARED BY
LYDIA E. PINKHAM MEDICINE CO.


LYDIA E. PINKHAM'S
VEGETABLE
COMPOUND
(WITH VITAMIN B1)
(CONTAINS 15 PER CENT ALCOHOL)
THIS IS ADDED SOLELY AS A SOLVENT AND PRESERVATIVE
ACTIVE INGREDIENTS
CRYSTALLINE VITAMIN B1
GENTIAN, BLACK COHOSH
TRUE & FALSE UNICORN
LIFE & PLEURISY ROOTS
DANDELION, CHAMOMILE
RECOMMENDED AS A VEGETABLE TONIC IN CONDITIONS FOR WHICH THIS PREPARATION IS ADAPTED
DIRECTIONS
One Tablespoonful every four hours throughout the day. Shake the bottle before using.
LYDIA E. PINKHAM MEDICINE CO.

The label which is reproduced above appeared on a bottle purchased in the early part of 1939. The label reproduced at the right is even more recent, and declares all of the active ingredients, in accordance with the Federal Food, Drug and Cosmetic Act.

According to Section 502(e) of the Federal Food, Drug and Cosmetic Act a drug shall be deemed to be misbranded:

"If it is a drug and not designated solely by a name recognized in an official compendium unless its label bears (1) the common or usual name of the drug, if such there be; and (2) *in case it is fabricated from two or more ingredients, the common or usual name of each active ingredient,* including the quantity, kind, and proportion of any alcohol, and also including whether active or not, the name and quantity or proportion of any bromides, ether, chloroform, acetanilid, acetphenetidin, amidopyrine, antipyrine, atropine, hyoscine, hyoscyamine, arsenic, digitalis, digitalis glucosides, mercury, ouabain, strophanthin, strychnine, thyroid, or any derivative or preparation of any such substances, contained therein: Provided, That to the extent that compliance with the requirements of clause (2) of this paragraph is impracticable, exemptions shall be established by regulations promulgated by the Secretary."

The second label reproduced in this article appears on the product as it is purchased over the counter today. In accordance with the stipulations quoted above, this label includes a list of the active ingredients. Thus, for the first time in the many years that this preparation has been on the American market, a purchaser is informed as to the nature of the product. Granted that the meaning of these various names of drugs is not particularly informative to the general public, nevertheless the ingredients are actually disclosed. Now agencies interested in keeping the public informed can call attention to the ingredients and their significance in modern therapeutics. There follows herewith a brief consideration of the ingredients listed on the label of Lydia Pinkham's Compound. The phrases which appear in quotation marks in the paragraphs below are taken from the present edition (or previous editions, in cases of those drugs which are no longer included in the present edition of the U. S. P. or N. F.) of the "Epitome of the U. S. P. and N. F." (A. M. A. Press).[1]

Crystalline vitamin B_1 is admittedly useful in cases in which there is a deficiency of this vitamin. Since the public buys the Pinkham preparation without consulting a physician, it is difficult to know just how people are able to determine that they have a need for this vitamin. Even granting such a need, there is no occasion for taking this drug, which is available in pure form and which is available in many foods, in a solution containing 15 per cent alcohol.

Gentian. The latest edition of the United States Pharmacopeia includes this item. It is "probably the most widely used of the simple bitters."

Black cohosh. This drug appears in the most recent edition of the National Formulary under the name Cimicifuga. It is "a 'domestic medicine' that has been tried as a stomachic, antispasmodic, aphrodisiac, diaphoretic, diuretic and expectorant, but which *has not been found to possess definite value.*"

True unicorn. This drug appears in the latest edition of the National Formulary under the name Aletris and is a root which is "used in proprietary 'female remedies' *without evidence of value.*"

False unicorn. This drug appears in the latest edition of the National Formulary under the name Helonias and has been stated to be an "ingredient of 'female remedies'; *without established value.*"

Liferoot. This drug no longer appears in the official compendiums but was included in the 1926 edition of the National Formulary under the name Senecio and has been said to have been used by the North American Indians for healing wounds. "It has been used in a variety of conditions, but *it is entirely superfluous.*"

Pleurisy root. This drug was also last heard of officially in the 1926 edition of the National Formulary and has been described as "an obsolete domestic remedy for pleurisy, also used as a diaphoretic. *Probably without value.*"

Dandelion. This appears in the present edition of the National Formulary under the title Taraxacum. It "has been used as a bitter tonic (without advantage over gentian) and is a mild laxative in habitual constipation (inferior to drugs like cascara sagrada); has no specific action on the liver."

Chamomile. This drug appears in the latest edition of the National Formulary under the title Matricaria and is said to be "popularly used as a bitter, an aromatic tea or a poultice; effects, if any, are due mainly to hot water."

With the exception of the crystalline vitamin B_1, therefore, it is not even necessary to know the quantity of the ingredients to surmise that the Compound is not of any established value beyond whatever virtures may be attributed to the various bitters.

The failure to establish any value scientifically, however, does not seem to have much effect on the current advertising for this preparation. Here reproduced is a recent advertisement entitled "Women in Your 40's Need Not Lose Charm!" The implica-

1. Italics ours.

tion is that this Compound will prevent, or at least alleviate, the symptoms of the menopause. Scientifically the modern effective method of treating such symptoms is to supply the deficient hormone, which, of course, is not contained in this Compound.

WOMEN IN YOUR 40's

Need Not Lose Charm!

Here's good advice for a woman during her change (usually from 38 to 52), who fears she'll lose her appeal to men, who worries about hot flashes, loss of pep, dizzy spells, upset nerves and moody spells.

Just get more fresh air, 8 hrs. sleep and if you need a reliable "WOMAN'S" tonic take Lydia E. Pinkham's Vegetable Compound, made *especially for women*. It helps Nature build up physical resistance, thus helps give more vivacity to enjoy life and assist calming jittery nerves and those disturbing symptoms that often accompany change of life.

For free trial bottle tear this out and send with name and address to Lydia E. Pinkham Medicine Co., 973 Cleveland St., Lynn, Mass.

Pinkham's is WELL WORTH trying.

Lydia E. Pinkham's

VEGETABLE COMPOUND

There is not an iota of scientific evidence to support the recommendation of this mixture for the treatment of the symptoms of the menopause. It remains to be seen just what limits will be placed on this type of advertising in the near future. Progress has been made, but still more progress is necessary if the public is to be protected against the blandishments of "patent medicine" promoters.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

DIAGNOSIS AND TREATMENT OF TABES

To the Editor:—1. What are the minimal manifestations on which a diagnosis of tabes dorsalis can be made? 2. Is an untreated tabes with negative spinal fluid a burned out tabes that requires no treatment? 3. What are the criteria for cessation of treatment in a case of tabes?

M.D., New York.

ANSWER.—1. It is difficult to say what are the minimal manifestations which would justify a diagnosis of tabes dorsalis. It would be well to have a positive spinal fluid associated with some pupillary changes and diminution of the deep tendon reflexes of the lower extremities. In the absence of a positive spinal fluid there should certainly be definite evidence to physical examination of disease of the posterior nerve roots in a patient diagnosed as having syphilis. The Cooperative Clinical Group (*Arch. Dermat. & Syph.* **38**:692 [Nov.] 1938) lists the following subjective and objective symptoms as of diagnostic value: diplopia, neuritic pain, reduced libido and potentia, gastrointestinal or laryngeal crises, paresthesia of the hands and feet, headache, dizziness, vertigo, ataxia, failing vision, incontinence, girdle sensation, Argyll Robertson pupils, fixed pupils, irregular pupils, anisocoria, reduction of the deep reflexes, reduction of pain sense, hyperesthesia, heat and cold changes, ataxia and incoordination.

2. It would be unwise to consider an untreated tabes with a negative spinal fluid as a burned out tabes. Such a patient should be submitted to at least the minimum standard treatment for the cure of syphilis, as advised by the Cooperative Clinical Group, provided age and physical condition will permit.

3. The age of the patient, his symptoms and the benefits derived from treatment should be used as criteria in determining the duration of treatment for tabes. The Cooperative Clinical Group survey mentioned has shown that routine therapy in the form of at least two courses of arsphenamine of eight injections and from twelve to fifteen injections of a bismuth preparation will reverse the reaction of the spinal fluid in many cases of tabes dorsalis. When examination of the spinal fluid shows that treatment as just described has not made any material change in the spinal fluid and where there is no material improvement in the clinical aspects of the disease, the patient should be given the advantage of supplemental or auxiliary treatment. If the routine is to produce the most satisfactory result, it must consist of more than twenty injections of arsphenamine and twice as much of a bismuth preparation. Intraspinal therapy is most efficient when a minimum of seven intraspinal treatments is given in conjunction with the routine treatment. When tryparsamide is employed, at least thirty injections of tryparsamide and thirty injections of a bismuth preparation should be given to a course, although the most satisfactory results are noted among patients who receive 100 or more injections each of tryparsamide and of bismuth preparations. If malaria therapy is used, a patient should undergo not less than eight "chills" or satisfactory rises of temperature.

NEPHRITIS AND PREGNANCY

To the Editor:—A primipara aged 28 was first seen in January 1938 with a three and one-half months gestation and no abnormalities on physical examination. The blood pressure was 125/75. In February it was 155/85 and in April 194/110 with 2 plus albumin in the urine, no casts, but occasional white cells. With bed rest and sedatives the blood pressure dropped to 165/90 but soon rose again. Finally the urine showed 4 plus albumin (end of May) and she was brought to a hospital and labor was induced by insertion of a Vorhees bag. While the bag was expelled, the cord prolapsed. Version and extraction of a 5½ pound (2,500 Gm.) baby could not save its life. The patient had a thrombophlebitis with uneventful recovery. Two months after delivery her blood pressure was 140/90, the urine was normal and she felt fine. At no time was there headache or precordial distress—only edema of the face and legs. She is anxious to know whether she could have another baby and when. Would two years' waiting have any bearing on a recurrence during the next pregnancy? Provided the blood chemistry is negative at present and kidney function tests (Mosenthal and phenolsulfonphthalein) good, could pregnancy be contemplated at once or never at all? M.D., Minnesota.

ANSWER.—The clinical history presented is typical of preexistent renal disease exacerbated by pregnancy. A true "low reserve kidney," such as this case presents, is perhaps the most significant of all the forms of renal and hypertensive disorders found in obstetric medicine. It is the type most frequently ignored until irreparable damage is done. The nephritides as they occur in pregnancy are best classified under four groups: type A, the simple nephrosis of pregnancy; type B, eclampsia or eclamptic intoxication; type C, preexistent renal and/or hypertensive disease exacerbated by pregnancy, and type D, coincident nephritis. Type A is characterized by a relatively late onset, profuse proteinuria, moderate hypertension, a good immediate prognosis and remarkably rapid and complete recovery after the termination of pregnancy. Eclampsia need not be discussed here. Coincident nephritis includes that small group of cases in which nephritis occurs in pregnant women for etiologic reasons wholly independent of the pregnant state: acute infective nephritis, mercury bichloride nephrosis, and so on (Adair, F. L., and Stieglitz, E. J.: Obstetric Medicine, Philadelphia, Lea & Febiger, 1934, chapter XXVIII).

Preexistent nephritis, such as unquestionably existed in the present case, is frequently unrecognized and silent until the increasing stresses and renal burden of pregnancy precipitate evidences of renal incompetence. The term "low reserve kidney," if strictly applied, obviously described just such a situation. The renal functional capacity is adequate for the ordinary load of renal work, but there is depletion of the reserve for the extra effort involved in the secretion of the greatly augmented metabolic débris of pregnancy. These stresses and other factors then incite an exacerbation of the renal injury. It is most important to keep in mind that much of the exacerbation of the renal injury persists permanently after the pregnancy in these cases. The renal functional reserve is usually notably lower after such an experience than before. Thus the risk in future pregnancies becomes increasingly great and the likelihood of obtaining a living infant increasingly remote.

Characteristic of this type of nephritis is the onset of hypertension early in the pregnancy. A useful and practical axiom is that the earlier in pregnancy hypertension and/or proteinuria appear the lower is the renal reserve. The longer such pregnancies continue, the greater the irrevocable renal damage and the poorer the ultimate prognosis for the patient. In those carried to fetal viability, or as long as possible, the future course

is usually downhill. Rapidly progressive hypertensive arterial disease is frequently initiated by pregnancy in these women. In such the prognosis is poor. Fetal mortality is close to 60 per cent even with the most conservative management.

It is notable that two months post partum this patient still has a borderline hypertension of 140/90 (age 28). The absence of protein from the urine is an utterly worthless criterion of her renal functional capacity. So also would be a present "negative blood chemistry" (blood constitutents at normal concentration). Increases in the concentration of the nonprotein nitrogenous metabolites in the blood occur only when actual renal decompensation exists. The patient's renal function appears to be adequate at present (under the present loads) but the depleted reserve would permit of renal failure if and when the load is increased, as with another pregnancy. Only careful evaluation of the patient's renal function reserve can tell what her margin of safety is. Stress tests such as the concentration procedure are of greater value here than the phenolsulfonphthalein or urea clearance tests.

The decision to deprive a woman of the privilege of bearing children must never be taken lightly. Therefore great care and thorough study are required before such questions can be adequately answered. In the present instance the following suggestions appear warranted: 1. Careful evaluation of the patient's renal functional reserve at the present time. 2. Frequent observation of her arterial tension for a year or more. It may rise gradually. If so, future pregnancies would be of suicidal precariousness. 3. Attention to foci of infection, general health, nutrition, and especially to the hemoglobin content of the blood. Anemia, even of minor degree, is a potent factor in retarding the rehabilitation of injured tissues and especially damaged kidneys. 4. A cold pressor test to determine the patient's arteriolar excitability. Such a test may give valuable prognostic information. 5. Reevaluation of the renal function after twelve to eighteen months. 6. Frequent antepartum observation. If a second pregnancy does occur, this is imperative from the beginning. Should the arterial tension again rise and proteinuria appear, particularly if these occur earlier in the second pregnancy than in the first, therapeutic termination of pregnancy would be justified. After that, further attempts must be urgently discouraged.

TREATMENT OF TAPEWORM

To the Editor:—Will you please give me information regarding any recent, or the best, method and technic in the management of a patient with a tapeworm. I should like to have this information in connection with both the drug and the method of use. A girl aged 5 years, first observed almost a year ago, had been underweight for several months and just prior to that time her mother had noticed several large segments of tapeworm in her stool. She was admitted to the hospital and given routine treatment for tapeworm, the standard amount of oleoresin of aspidium being given for her age. Each time she expelled large sections of the worm—approximately 20 feet with each treatment. The head of the worm was never found in the stool but twice segments of the worm were identified which must have been immediately at the head. The third and last treatment was given about four months ago. As after each of the other treatments she improved for about three months. A few days ago after the administration of a mild purgative she expelled large segments of tapeworm.

J. S. HOLBROOK, M.D., Statesville, N. C.

ANSWER.—Oleoresin of aspidium is the drug of choice for treatment of the beef tapeworm (Taenia saginata) and the pork tapeworm (Taenia solium). The lengths of worm evacuated by the patient after medication and the relative rarity of the pork tapeworm in the United States indicate that one is here dealing with Taenia saginata. For effective treatment the drug must be fresh and must be preceded and followed (or accompanied) by saline purgation.

On the day before treatment the patient should be placed on a semiliquid diet and before retiring should be given one-half ounce (15 Gm.) of sodium sulfate or magnesium sulfate dissolved in a glass of water. Sodium sulfate is preferred because it dissolves mucus away from the head of the worm and thus allows the anthelmintic to act more efficiently. The disagreeable taste of the purgative may be partly disguised by adding to it the juice of half a lemon. On the morning of treatment the patient remains in bed and takes no food. The oleoresin of aspidium is prescribed in three divided doses, to be taken half an hour apart. Each of the three doses should not exceed 20 minims (1.3 cc.) for an adult or 10 minims (0.65 cc.) for a child of 5 years. This medication is followed in one or two hours by saline purgation, similar to that taken the night before treatment. The patient may have food as soon as copious bowel movements have been obtained.

A satisfactory alternative treatment consists in transduodenal intubation of the anthelmintic. The patient is prepared for treatment as indicated. On the morning of treatment the tube is directed into the duodenum under a fluoroscope, after which an emulsion of the following composition (calculated for a child of 5 years), is slowly introduced: oleoresin of aspidium 40 minims (2.6 cc.), mucilage of acacia 20 cc., saturated solution of sodium sulfate 20 cc. No post-treatment purgation is required.

Both of the prescriptions mentioned are usually successful in dislodging and evacuating the heads of tapeworms.

GRANULOCYTOPENIA AND MALARIA

To the Editor:—I should appreciate your assistance in securing some information about the occurrence of agranulocytosis in malaria. I found two references in the German literature. Both refer to cases of malaria which followed malarial therapy for dementia paralytica. Here, however, the picture is slightly obscured by the prior administration of arsenicals and bismuth. Do you know of any reports of agranulocytosis in malaria?

SIDNEY LEIBOWITZ, M.D., New York.

ANSWER.—There are no well authenticated instances of agranulocytosis developing during the course of untreated malaria. Although malaria in some patients may be accompanied by a mild or moderate temporary leukopenia, usually the differential count is unaffected. More often there may be a leukocytosis, especially in the more acute forms of the disease.

It should be pointed out, however, that agranulocytosis has been reported after the administration of certain antimalarial therapeutic agents. Thus quinine has been reported to be causative in several instances (Vitug, W.; Chavez, A., and Austria, G. F.: *J. Philippine Islands M. A.* **15**:464 [Sept.] 1935. Groen, J., and Gelderman, C. J.: *Nederl. tijdschr. v. geneesk.* **78**:3444 [July 28] 1934. Dassen, R., and Fongi, E.: *Rev. Asoc. méd. argent.* **49**:1077 [Aug.] 1935. Corelli, F.: *Hematologica* **15**:663, 1934) while plasmochin apparently produced complete disappearance of granulocytes in one patient (Knighton, J. E., Jr.: *New Orleans M. & S. J.*, p. 755, 1935).

In instances of malarial therapy for dementia paralytica in which arsenical compounds have been administered previously, it would be quite difficult to assume the leukocyte depression to be caused by the malaria, since it is well established that the arsenicals may produce agranulocytosis in occasional instances, Plum having summarized fourteen such cases (Plum, Preben: Clinical and Experimental Investigations in Agranulocytosis, London, H. K. Lewis & Co., 1937, p. 101). Furthermore, in occasional instances the action of the arsenicals on the bone marrow may be delayed and apparently cumulative.

In order to assume the development of agranulocytosis after infection with malaria, it would be necessary to rule out the use of therapeutic agents such as those mentioned, and if such agents have been used in the immediate past prior to development of agranulocytosis the disease most likely would have resulted from them rather than from the malaria.

EPISTAXIS

To the Editor:—Acting as an interpreter at a series of Red Cross first aid lectures, the lecturer spoke on epistaxis. He stated that when one sees bleeding from the right side, the base of the left ring finger should be bound tightly with a string for a while, and vice versa for bleeding from the left side. The next evening an opportunity to prove his statement was presented. The patient was bleeding from the left side. On tying the right ring finger at its proximal portion of the phalanx, I controlled the epistaxis easily and promptly. Can you suggest any basic reason for this? Is there any literature on this subject?

M. PAUL SUZUKI, M.D., Seattle.

ANSWER.—Cases of epistaxis may be conveniently divided into three groups. There is the extremely severe case encountered in surgery of the nose, in malignant growths or as an accompaniment of certain cardiovascular conditions. This group is characterized by a single, profuse hemorrhage. The second class would be cases that are characterized by repeated, moderately severe hemorrhages. These patients frequently have been treated by all the popular home remedies and by at least a half a dozen surgical procedures. Because of a slight ulceration in the nose or of some unusual permeability of the blood vessels, bleeding occurs with every slight trauma. The third group is by far the largest in number of cases. Ordinarily the hemorrhage is slight and is self limited. The popular home remedies for the control of epistaxis of this character are almost as numerous as the procedures treasured by the public for the removal of the common wart. The self-limiting character of this group of cases gives an apparently high incidence of cures to any of the popular methods. There is no known basis of an anatomic or physiologic character that would explain the cessation of the epistaxis as described in the query.

The therapeutic scheme here described seems to be a recrudescence with slight modification of "zone therapy," which had a vogue from about 1915 to 1920. Popular articles appeared in *Everybody's Magazine, Associated Sunday Magazines* and *Every*

Week. In the latter publication, Bruce Barton spoke approvingly of the method. Fitzgerald seems to have been the prominent exponent of this so-called system. In "Zone Therapy or Relieving Pain and Disease" by Drs. William H. Fitzgerald and Edwin F. Bowers (Columbus, Ohio, I. W. Long, 1918) the physician is advised for epistaxis to apply strong constriction to the base of the thumb and index finger of the affected side or in severe cases to apply constriction about all the digits of both hands. Special rubber and metal constricting rings were available in this work. An alphabetical therapeutic index is furnished which tells how to relieve angina pectoris, produce anesthesia, cure asthma, lower blood pressure, raise blood pressure, cure bronchitis, cure brachial neuritis, relieve constipation and so on through the alphabet to writers' cramp and wry neck—all by constricting or pinching the proper fingers and toes. *American Medicine* (November 1921) carried an article by Dr. Fitzgerald on "Zone or Pressure Therapy." In the editorial column it was pointed out that only time would tell the value of this procedure. Time has established its worthlessness.

NURSE AS CARRIER OF AMEBAS

To the Editor:—1. Is it compatible with safety for a nurse having a stool positive for Endamoeba histolytica (cysts) to be on duty in a general hospital? 2. If excluded from duty, how long should the stool and symptoms be free before it is safe for her to return? 3. Are there any other suggestions?

M.D., Oklahoma.

ANSWER.—1. It is safe for a nurse having a stool positive for Endamoeba histolytica to be on duty in the general hospital if she has the knowledge to care for her hands competently so as to prevent any possibility of transfer of the infection to others. This entails keeping the nails well trimmed and careful washing of the hands with soap and water immediately after going to the toilet, as well as at any other time when they may have become contaminated.

2. If the nurse is excluded from duty, she should have three negative stool examinations and be free from symptoms for a week before she is allowed to return. As a rule, however, with the proper care, exclusion of a nurse who is an Endamoeba histolytica carrier from duty is not required.

3. The same regulations should apply to a nurse as to a food handler infested with Endamoeba histolytica.

DETERMINATION OF VITAMIN B_1 BY FLUORESCENCE

To the Editor:—A few weeks ago I saw a clipping to the effect that some one had invented an instrument for the detection and determination of amounts of vitamin B_1 in substances. The principle of the instrument as I recall, was based on the use of the photoelectric cell in some manner. I would greatly appreciate any information concerning such an invention.

M.D., Missouri.

ANSWER.—Presumably the method to which reference is made is that of converting vitamin B_1 (thiamin) into thiochrome by oxidation with alkaline potassium ferricyanide, as originally suggested by Jansen. The resulting thiochrome is extracted from the aqueous solution with isobutanol and quantitatively estimated by the blue fluorescence which its solution exhibits in ultraviolet light. Several other workers have endeavored to perfect the method, so that at the present moment it promises a somewhat higher precision than any other chemical test.

D. J. Hennessy and L. R. Cerecedo published in the January 1939 issue of the *Journal of the American Chemical Society* some modifications of the method tending to adapt it for use in the assay of a variety of biologic fluids and tissues. They also provide for distinguishing free thiamin from its pyrophosphate (cocarboxylase) and give complete references to the earlier literature.

LEUKOPLAKIA IN YOUNG WOMAN

To the Editor:—A woman about 24 years of age has a rather extensive case of leukoplakia. The dentist and I are doing everything possible to correct any possible cause. It seems stationary but is certainly persistent. Is there anything new that can be recommended? The patient appealed to me recently pleading for cure. She is engaged to be married in May.

WARREN T. MCNEIL, M.D., Stockton, Calif.

ANSWER.—In the majority of cases of leukoplakia buccalis no ill effects occur. While leukoplakia is regarded as precancerous, a malignant change need not necessarily follow even after many years. Therefore in most instances no radical treatment need be considered. Of course, the patient's mouth should be inspected at intervals of six months to apprehend any unfavorable changes in the lesions.

There should be an investigation as to the presence of syphilis, which should receive standard treatment if present. Some investigators state that in fully 50 per cent of patients with leukoplakia there is a background of syphilis. Otherwise the patient should not smoke at all. The food should not be highly spiced, very hot or cold. Soothing applications may be made to the lesions, such as tincture of myrrh. Silver nitrate crayons may be used on fissures and erosions, but great care should be taken not to stimulate an already present epithelioma by such superficial caustic applications. Acid mercuric nitrate has been much used, but its action must be strictly confined to the lesions. For local thickenings and irregularities the cautery is best. If a malignant change takes place in any of the lesions, it is treated the same as cancer of the mouth otherwise.

In a patient as young as this woman, leukoplakia is unusual. One should use care to make sure that she does not have lichen planus limited to the mucous membranes, instead of leukoplakia.

TRAUMA AND PAIN UNDER RIBS

To the Editor:—An employee of an oil company fell against a pipe, striking the left lower part of the chest. He complained of intense pain located deep in and under about the ninth and tenth ribs in front. X-ray examination showed that no ribs had been fractured. The pain lasted for about one month but gradually became less intense and finally subsided entirely. There were no abdominal symptoms. Please advise as to the possible causes of this pain. What is the most probable cause? I have been unable to find anything in any books which I have regarding injury of the spleen except rupture. Could a congestion or swelling of the spleen put tension on its capsule and account for such a pain?

C. L. PEARCY, M.D., Salem, W. Va.

ANSWER.—Several possibilities present themselves as explanations of the pain in this case. The contusion of the spleen without actual rupture of the capsule is certainly a strong possibility. It is certainly likely that minor ruptures or tears in the capsule with a small amount of bleeding do occur and heal without anything further being done. Second, rupture of the diaphragm has to be considered; third, a minor injury to the left lobe of the liver with a crack in the capsule and a small amount of bleeding or a localized contusion without bleeding. Fourth, a contusion of the lung on the left side has to be considered; fifth, a contusion involving the heart with effusion of blood in the pericardium with gradual absorption. The fact that the pain has gradually disappeared would seem to indicate that no further treatment is necessary. However, the literature contains many cases of ruptures of the spleen coming on secondarily a month or more after the primary injury has weakened the capsule.

SPINAL FLUID WASSERMANN FAST NOT DESIRABLE TERM

To the Editor:—It is well known that in some cases of syphilis that have had adequate treatment, the blood may be "Wasserman fast." In a case presenting a 4 plus Wassermann (blood) reaction and 4 plus spinal fluid Wassermann reaction and a negative colloidal gold test with no increase in spinal fluid globulin or cell count, is it possible to consider the patient as being "spinal fluid Wassermann fast"? He has had two years of continuous treatment alternating bismuth compounds and neoarsphenamine. Since the spinal fluid was examined six months ago he has received twenty injections (3 Gm.) of tryparsamide and ten malaria chills with no effect on the spinal fluid Wassermann reaction. Clinically he is asymptomatic, and careful systemic and neurologic examinations on several occasions have been completely negative. Can one speak of "spinal fluid Wassermann fast" as well as "blood Wassermann fast"? If so, what is the relative frequency? I would appreciate any information that you can give me.

M.D., New York.

ANSWER.—The use of the term "Wassermann fastness" is deprecated because it implies a clinical state, whereas in reality it is nothing but a group of serologic reports. In practically all patients who have "Wassermann fast" blood tests some explanation can be found for the Wassermann fastness in the fact that the patient either has neurosyphilis or cardiovascular syphilis and only in a few is there no definite explanation to be offered as a result of thorough clinical examination or examination of the spinal fluid. Occasional patients with neurosyphilis are seen in whom the flocculation or complement fixation test on the spinal fluid will remain positive while all other tests on the spinal fluid are negative. This type of report may or may not be of significance as it is frequently seen in patients who, when treatment is stopped, will immediately relapse in the spinal fluid to strongly positive in all factors. On the other hand, it is frequently seen in patients with tabes dorsalis in whom the fixation or complement fixation on the spinal fluid will be positive for years while all other factors on the spinal fluid will remain persistently negative. In the case under discussion, sufficient time has not as yet elapsed to make deductions with regard to the significance of the positive flocculation test on the spinal fluid, as the last spinal fluid test was done only six months ago. As a rule significant changes in the spinal fluid will not be noted for at least two years following the fever course. In the interim it would seem advisable to continue with treatment and in the case under discussion tryparsamide and a bismuth compound or arsphenamine and a bismuth compound

should be given approximately at the rate of two courses a year for the two ensuing years, at least. This implies, of course, that the term "spinal fluid Wassermann fast" should not be adopted because, although experience with spinal fluids is not great enough as yet to attach concrete significance to such a finding, it would appear that several years of observation after intensive treatment has been stopped should be employed before endeavoring to make any deductions as to the significance of this type of spinal fluid.

DERMATITIS FROM CARBON DISULFIDE

To the Editor:—Will you kindly state whether or not it is possible to develop a skin lesion when one has been mildly poisoned by the fumes of carbon disulfide? If this should be possible, what kind of a lesion would develop? I have a patient who says that he became quite ill while handling the chemical and developed patches on the arms and body which were about the size of a silver dollar and are of a brownish color and slightly scaly. Could this chemical produce such a lesion?

H. W. JONES, M.D., Bakersfield, Calif.

ANSWER.—Carbon disulfide (CS_2) usually causes dermatitis at the point of contact. The lesions usually are characterized by erythema, vesicles and degenerative changes in the local peripheral nerves resulting in impaired sensation. Carbon disulfide is a vesicating agent acting chiefly as a fat solvent. Prolonged contact with the skin will cause manifestations characteristic of second and third degree chemical burns. Exposure of the skin to dilute solutions or vapors may cause a drying of the skin as a result of the solvent action on the fats and the cooling effects of evaporation. These lesions may affect whatever parts come in contact with the vapors or fumes. As the lesions heal there may be a residual pigmentation.

Splashes of the chemical on the clothes of the patient may have caused lesions which after healing may have resulted in such patches as those described. If the patches were not the result of healed eczematous lesions, it can be said that they were not caused by carbon disulfide. Pityriasis rosea, fixed drug eruptions such as may be caused by phenolphthalein, patches of parapsoriasis and other similar cutaneous conditions must be considered.

UNDESCENDED TESTIS

To the Editor:—A boy aged 5 years has one testis in the scrotum and the other still in the inguinal canal, though it can be brought down with mild traction. The testis that is in the inguinal canal is considerably smaller than the one that has descended. Would treatment with anterior pituitary-like substance be indicated?

M.D., Illinois.

ANSWER.—The probabilities are that if the testis can be brought down into the scrotum by mild traction it will descend before or at puberty. The whole question involved is therefore whether or not it would be better to have the testis constantly in the scrotum at an earlier period than it would be by "watchful waiting." From experimental evidence it would appear that, the earlier the testes are brought into the scrotum after birth, the more normal they are likely to be. Therefore it would perhaps be best to give this particular boy a short period of treatment using 200 to 300 rat units of gonadotropic substance four times a week for a period of from five to six weeks. If there is any indication of an increase in the size of the external genitalia, the treatment should be discontinued as soon as this is recognized.

HEAT PROSTRATION AND SINUSITIS

To the Editor:—Are there any reports of sinusitis (especially maxillary) following heat prostration? If there are please give me some information on the cases and if possible some literature to read on the subject.

E. H. COACHMAN, M.D., Muskogee, Okla.

ANSWER.—A search of the literature for the past ten years and standard textbooks on rhinology fails to reveal any information on sinusitis following heat prostration.

ANTITYPHOID VACCINE

To the Editor:—Some time ago I noticed that the army had discontinued using paratyphoid A and B for vaccine, using simply Bacillus typhosus. Is this a generally accepted plan? I note that the majority of the biologic companies are still using the old formula which contains paratyphoid A and B.

W. S. CRAWFORD, M.D., Tulsa, Okla.

ANSWER.—The antityphoid vaccine now used by the army is being used more and more widely, but vaccine made according to the old formula is used also. All antityphoid vaccines on the market are tested for antigenic values and are approved by the U. S. Public Health Service.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, May 13, page 1991.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Medical centers having five or more candidates desiring to take the examination, June 19-21 and Sept. 11-13. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th Street, Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF ANESTHESIOLOGY: An Affiliate of the American Board of Surgery. *Written.* Various places throughout the United States, Sept. 9. Applications must be filed by July 11. *Oral.* Part II. Philadelphia, Oct. 14-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Philadelphia, Oct. 30-Nov. 1. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Various sections of the United States, Oct. 16 and Feb. 19. Formal application must be received before Aug. 20 for the Oct. examination and on or before Jan. 1 for the Feb. examination. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various cities of the United States, Puerto Rico and Canada and in Honolulu, Aug. 5. *Application must be received before July 1. General Oral.* Chicago, Oct. 7. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Boston, January. Sec. Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 6-7. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Cincinnati, Nov. 15. Appointments must be made before July 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF UROLOGY: White Sulphur Springs, W. Va., May 26-28. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Alabama January Examination

Dr. J. N. Baker, secretary, Alabama State Board of Medical Examiners, reports the written examination held at Montgomery, Jan. 3-5, 1939. The examination covered ten subjects and included 100 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. The following school was represented:

School	PASSED	Year Grad.	Per Cent
Tulane University of Louisiana School of Medicine		(1938)	85.2

Nevada Reciprocity and Endorsement Report

Dr. John E. Worden, secretary, Nevada State Board of Medical Examiners, reports three physicians licensed by reciprocity and one physician licensed by endorsement after an oral examination held at Carson City, Feb. 6, 1939. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of California Medical School		(1927)	California
State University of Iowa College of Medicine		(1926)	Minnesota
Jefferson Medical College of Philadelphia		(1920)	California

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Stanford University School of Medicine		(1938)	N. B. M. Ex.

Hawaii January Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, Territory of Hawaii, reports the oral and written examination held at Honolulu, Jan. 9-12, 1939. The examination covered ten subjects and included eighty questions. An average of 75 per cent was required to pass. Four candidates were examined, three of whom passed and one failed. Four physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of California Medical School		(1934)	83.1
University of Colorado School of Medicine		(1931)	82.4
Washington University School of Medicine		(1937)	80.8

School	FAILED	Year Grad.	Per Cent
Nippon Ika Daigaku, Tokyo		(1937)	59

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Yale University School of Medicine		(1931), (1935)	N. B. M. Ex.
Northwestern University Medical School		(1937)	N. B. M. Ex.
Johns Hopkins University School of Medicine		(1935)	N. B. M. Ex.

Book Notices

Scarlet Fever. By George F. Dick, M.D., D.Sc., Professor of Medicine, University of Chicago, and Gladys Henry Dick, M.D., D.Sc. Cloth. Price, $2. Pp. 149, with 8 plates. Chicago, Illinois: Year Book Publishers, Inc., 1938.

Containing a concise account of the application of the investigations of the authors to the prevention and treatment of scarlet fever, this book summarizes their articles on these matters during the past twenty years or more. The demonstration by human experiments on the part of the authors that scarlet fever may be caused by hemolytic streptococci was followed by the discovery of a specific streptococcic scarlet fever toxin, which in turn led to the Dick test for susceptibility to scarlet fever, to successful active immunization against scarlet fever and to the use in treatment of a specific antitoxin. The book describes the practical use of these measures and the results obtainable. The preparation of the scarlet fever toxin and the technic of testing its potency are described in detail. The book is a landmark in the history of scarlet fever.

Pyrétothérapie. Par Charles Richet, professeur agrégé à la Faculté de médecine de Paris, Jean Surmont, médecin électro-radiologiste des hôpitaux de Paris, et Pierre Le Gô, électro-radiologiste des Asiles de la Seine. Paper. Price, 50 francs. Pp. 195, with 28 illustrations. Paris: Masson & Cie, 1938.

This is the first monograph on pyretotherapy, or artificial fever, to appear in French. The authors divide their thesis into five main chapters entitled biologic principles, technic, clinical results, pathogenesis of pyretotherapy and conclusions. They conclude that there is a direct relationship between body temperature and inhibition of the growth of certain micro-organisms, especially the gonococcus and Spirochaeta pallida. This bactericidal action of heat can be demonstrated in vitro and in vivo, though it is more pronounced in vivo. They state that this may be due to the well known acceleration of most chemical reactions under the stimulating influence of heat. They further conclude that the source of the fever makes little difference, that the micro-organisms are destroyed in vivo at temperatures compatible with life and that fever modifies human physiologic reactions to a profound degree.

The second and longest chapter of the book discusses the production of fever. Inoculation with malaria and the production of relapsing fever and of sodoku, or rat bite fever, are described, with their advantages and disadvantages. In the section on the use of suspensions of killed micro-organisms, the action of dmelcos vaccine, consisting of an emulsion of the Ducrey bacillus, which is more widely used in France than in the United States, is described in detail. The authors conclude that this vaccine presents the advantages of a quick rise of the febrile curve and the possibility of predetermining the amount of fever, since the dose is proportional to the amount of the vaccine injected. They are less pleased with typhoid, gonococcus, paracoli and yeast emulsions as well as bacterial proteins, such as tuberculin. Chemicals for producing fever are also mentioned, such as milk, sodium nucleinate, nucleoprotein, turpentine and benzine. The authors conclude that colloidal solutions of silver and suspensions of sulfur in oil are the only chemicals that are really practical. The rest of the chapter is devoted to a thorough discussion of the physical methods of elevating the temperature. An error is the statement that it is difficult to raise the temperature of the human body above 40 C. (104 F.) by means of damped diathermy waves. The discussion on external heating contains a brief description of the various wavelengths and their frequency, clarified by a useful chart. The section dealing with the machines used for producing short radio waves is comprehensive and clear. Naturally French machines occupy the foreground, but this is to be expected in a book intended for French physicians. A new pyrometer constructed by Le Gô seems to be better than the instruments in common use in the United States. Accidents such as burns, heat stroke and involvement of the cardiovascular system are dealt with in detail. The authors distinguish between the effect of active and of passive pyretotherapy. The former is produced by the body itself as a result of inoculations or injections and the latter by transferring energy into the body. They liken active pyretotherapy to shock. Finally the contraindications of treatment are ably discussed in detail.

The third chapter, dealing with the clinical results of pyretotherapy, is clear and comprehensive and illustrated with frequent case reports. The results achieved in the treatment of gonorrhea and all its complications, primary and secondary syphilis, syphilitic optic atrophy, tabes, cerebrospinal syphilis and dementia paralytica are discussed in detail. The authors then describe the treatment of chorea minor, encephalitis, Parkinson's syndrome, multiple sclerosis, poliomyelitis, psychoses and other psychiatric conditions, cardiovascular diseases, gout, arthritis, articular rheumatism, neuritis, asthma, soft chancre, diseases of the ears, nose and throat, staphylococcic infections, tuberculosis, ocular diseases, renal diseases, undulant fever, meningococcic meningitis, diseases of the lungs, dermatoses, obesity, carcinoma and mycosis fungoides. It is a great credit to the book that this widely divergent material dealing with therapeutic results is carefully analyzed and classified. The point of view is always conservative and no overstatement is made. Whenever the clinical results are doubtful or valueless the authors state this fact frankly and openly.

The two short final chapters contain the authors' theories on the reasons for the benign action of fever, either active or passive, on diseases as well as their own conclusions about the application of this therapy. Finally there is a bibliography of less than 150 references, which is not nearly complete, since the world literature on artificial fever alone now comprises more than 500 contributions. There is no index.

In spite of the minor defects mentioned the book is an excellent contribution to pyretotherapy. It fills a real need as a volume for reference, from which the physician can learn the technic of fever production as practiced in the United States and abroad.

Textbook of Neuro-Anatomy and the Sense Organs. By O. Larsell, Ph.D., Professor of Anatomy, University of Oregon Medical School, Portland. Cloth. Price, $6. Pp. 343, with 232 illustrations. New York & London: D. Appleton-Century Company, Incorporated, 1939.

Olof Larsell has presented a well organized, orthodox discussion of the structure, both gross and microscopic, of the central, peripheral somatic and sympathetic nervous systems. Sufficient physiologic and clinical data have been appended to enhance the student's interest in the subject and to indicate the more important correlations between structure and function. Although the "book has been written primarily for the first year medical student" and is accordingly not encyclopedic, it will prove of value and interest to many more advanced students. This is particularly true of the chapter dealing with the cerebellum and pons, a subject to which the author has been a noteworthy contributor. The discussion of the various end organs, cutaneous, tendinous and muscular, as well as the organs subserving specialized sensations, such as the taste buds, the olfactory epithelium, the retina, the vestibular apparatus and the cochlea, is a valuable addition to the discussion of the nervous system.

Unfortunately the text is neither always clear nor easily read; there are not a few errors which it is hoped will be corrected in future editions. On page 259 in the second paragraph from the bottom the statement of fact is literally correct but the meaning implied is false. One would conclude that, whereas Poljak and Brouwer found no optic fibers from the pulvinar to the calcarine cortex, Walker and Le Gros Clark did. This is not correct. The fibers found by Walker and Le Gros Clark were not to the calcarine cortex (area 17) but to other parts of the occipital lobe and were not regarded as optic fibers. The statement on page 97 that "special visceral efferent fibers arise from the motor VII nucleus and pass through the motor branches of the VII nerve to the mimetic muscles, derived from the musculature of the hyoid arch" is hardly designed to inform first year medical students that the seventh cranial nerve innervates the muscles of the face. The discussions, principally on pages 76 to 81, relative to the pathways subserving the sensations of touch and of pain are confused and even contradictory. On page 78 one finds the implication that the ventral spinothalamic tract alone carries the sensations of touch and pressure in the statement that destruction of that pathway abolishes the perception of such stimuli. There are other pathways for touch and pressure sensibilities in the posterior and lateral columns accord-

ing to page 80 and in the posterior and ventral columns according to page 90, and the further contradictory statement that the posterior columns have to do only with joint and position sense and with two point discrimination appears on page 79. On page 80 is found the erroneous statement that the destruction of the anterior white commissure of the spinal cord results "in loss of pain and temperature sensation on the opposite side of the body below the level of the lesion." The omission of the important spinothalamic tract from figures 90, 92 and 94, as well as others, is noteworthy. In the discussion of the afferent components of the glossopharyngeal nerve (page 95) all mention of the fibers of the carotid sinus nerve and of the tympanic nerve has been omitted, and the statement that the general somatic afferent fibers of this nerve are "distributed to the skin of the back of the ear and mastoid region" is at least open to question. In the legend to figure 19 the letters b and l have surely been interchanged. The statement on page 81 that the spinotectal tract is "apparently a correlation pathway" is meaningless and needs clarification. In spite of evidence (Stern) that the rubrospinal tract is little more than vestigial in man, this tract is illustrated and discussed as though it occupied a position of size and importance in man comparable to that in lower mammals.

The numerous illustrations, which are both original and selected from the literature, are well chosen and beautifully reproduced. The salient features of the descending and ascending tracts of the spinal cord are listed in table I and the principal visceral efferent or autonomic pathways in table II, which will prove most useful to the prospective student. The type has been well chosen. There is a brief bibliography appended to each chapter and a satisfactory index.

Experimentelle Untersuchungen über Farbengleichungen im zentralen und parazentralen Sehen. Von G. F. Olsson. Inauguraldissertation. Medizinische Fakultät zu Uppsala. Paper. Pp. 153, with 11 illustrations. Upsala, 1938.

This study of color equations was submitted as an inaugural dissertation. Because of its highly technical nature and limited scope it takes on the aspect of a thesis which in America might be submitted for a degree of doctor of philosophy. There is a frank and complete discussion, introductory to the problem, concerning previous investigations in this and kindred fields. The present work was accomplished with the aid of Gullstrand's color mixing apparatus, and the author used his own practically emmetropic eyes for all his investigations. He reaffirmed that the curves for complementary colors for central and paracentral vision diverge from one another and cross in the blue-yellow sector. In a consideration of color equations and their influence by the yellow macular substance Olsson concludes that, as far as the study of central and paracentral vision is concerned, such a theory is untenable. The pamphlet includes a picture and interpolation table for the Gullstrand color mixing apparatus, protocols of the experiments and a fairly complete bibliography.

Midwifery. By Ten Teachers. Under the direction of Clifford White, M.D., B.S., F.R.C.P. Edited by Sir Comyns Berkeley, Clifford White and Frank Cook. Sixth edition. Cloth. Price, $6. Pp. 676, with 262 illustrations. Baltimore: William Wood & Company, 1938.

In the preparation of this edition the aid of a number of new obstetricians was enlisted to replace the teachers who resigned. Some new material has been added and many of the old illustrations have been replaced with more instructive ones. In the discussion of the toxemias of pregnancy there is a peculiar division under the headings vomiting of pregnancy, the toxemias of pregnancy, albuminuria of pregnancy, preeclampsia and eclampsia, and icterus gravis gravidarum and toxic hyperemesis. The subject of chronic nephritis is included in the chapter on albuminuria. In the treatment of septic abortion the authors advocate removal of the contents of the uterus by means of the finger. However, this procedure may be just as dangerous as the use of a curet, against which the authors warn. In the discussion of pelves there is no mention of the recent important contributions made by Thoms and by Caldwell, Moloy and D'Esopo. The authors believe that paraldehyde is probably the best analgesic and that chloroform is the anesthetic of choice during labor. Mention is omitted of local infiltration anesthesia, although a paragraph is devoted to spinal anesthesia in spite of the fact that this form of anesthesia is particularly dangerous for pregnant women. This is the first edition in which illustrations of the low cervical cesarean section appear. The book is well written and in a uniform style notwithstanding that ten men collaborated in its preparation. The great wealth of material should permit it to retain its leadership among English textbooks on obstetrics.

Atlas de phonocardiographie clinique. Par A. Calô, assistant étranger à la Faculté de médecine de Paris. Préface du Professeur A. Clerc. Paper. Price, 60 francs. Pp. 104, with 150 illustrations. Paris: Masson & Cie, 1938.

Modern medicine is in search of precision instruments capable not only of rendering dependable service in the routine examination but also of opening new avenues of approach to unexplored regions of physiology and pathology. The importance of the analysis of heart sounds in the diagnosis of various cardiopathies induced Einthoven, Weiss, Wiggers and many others to construct ingenious sound recording apparatus, which however remained confined to a few laboratories on account of their imperfections, cost, bulk and fragility. Only in recent years, especially since the advent of radio, has the progress in this field been great, and heart sound recording devices can now be used not only for the study of the genesis and mechanism of normal sounds but also for the diagnosis of murmurs and pathologic rhythms. After a brief description of the apparatus the author devotes some space to a discussion of the graphic characteristics of normal and pathologic sounds, offers their classification, points out the advantages and limitations of the method and submits reproductions of thirty-seven phonocardiograms. In each instance the sound record is accompanied by an electrocardiogram, sphygmogram and orthodiagram, thus facilitating the interpretation of the observations. It is interesting that the phonocardiogram is able to detect certain acoustic phenomena not perceptible with the unaided ear, e. g., auricular murmurs in the course of an auriculoventricular dissociation and certain incipient forms of the gallop rhythm.

Bacteriology for Medical Students and Practitioners. By A. D. Gardner, D.M., F.R.C.S., Professor in Bacteriology, University of Oxford, Oxford. Second edition. Cloth. Price, $2.25. Pp. 274, with 32 illustrations. New York & London: Oxford University Press, 1938.

This pocket size book is well written and is in accordance with current thought in the field of bacteriology. A systematic and rational nomenclature has been followed which arranges the various kinds of bacteria in as many broad groups of genera as there are clear and constant group differences. In place of the indefinite names, such as Bacillus welchii and Bacillus melitensis, the author uses Clostridium welchii, Brucella melitensis, Pasteurella pestis and so on, names which differentiate and place each of the species in a definite group. Numerous tables separate species of like organisms. Particular attention is given to the practical interpretation of laboratory tests. The author feels that a knowledge of the contents of his book, supplemented by practical work and lectures, will sufficiently equip a student for the bacteriologic aspect of medical practice, although wider reading is advocated, especially on parts of the subject the student finds most interesting. This practical little book can be heartily recommended for the physician and as a help to the medical student in his course in bacteriology.

The Physiology of Anesthesia. By Henry K. Beecher, A.B., A.M., M.D., Instructor in Anesthesia, the Harvard Medical School, Boston. Cloth. Price, $3.75. Pp. 388. New York, Toronto & London: Oxford University Press, 1938.

At last a physiologist has reviewed the literature concerning the physiology of anesthesia and has presented a splendid bibliography, arranging the available data on the basis of both general and local anesthesia and also according to the various systems such as the respiratory and circulatory systems and according to the effect of anesthetic agents on each of the vital organs. It was the author's hope that this book might be used in medical teaching and reference work and more particularly that it should stimulate research. It should do each of these things and without doubt will speed the already rapid development of the specialty of anesthesia.

Refraction of the Human Eye and Methods of Estimating the Refraction Including a Section on the Fitting of Spectacles and Eye-Glasses. By James Thorington, A.M., M.D., F.A.C.S. Revised and edited by J. Monroe Thorington, B.S., A.M., M.D., Associate Ophthalmologist, Presbyterian Hospital, Philadelphia. Third edition. Cloth. Price, $3.50. Pp. 412, with 283 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1939.

The third edition of this useful little volume, in which a new format appears, extends Thorington's contributions to the subject over a period of forty years. As in the previous editions, important contributions are the simplicity and lucidness with which the subject is treated and the freedom from advanced mathematical formulas, which only confuse the beginner. Sections on the muscular insufficiencies and orthoptic training have been added, and, while these are not extensive, they give the important facts. A few typographical errors occur, such as the spelling of color on page 31 and the notation on page 118 that vision of the 60 line at 6 meters is recorded 4/60. This edition is accepted as one of the notable works in the introduction to refraction of the eye.

Die Gesetze des normalen Träumens. Von Dozent K. Leonhard, Oberharzt der Nervenklinik Frankfurt a. M. Boards. Price, 5.40 marks. Pp. 124. Leipzig: Georg Thieme, 1939.

In the author's introduction he states that the literature concerning dreams contains little except psychoanalytic concepts with their fantastic dream symbols, and that in Germany they now know that it was the racially foreign psyche that was responsible for the one-sided relating of dreams and sexuality. After this characteristic beginning he proceeds to describe dreams and states of sleep in a most superficial manner, completely ignoring the literature. He gives no clue to any scientific knowledge. The wishful basis of dreams he refutes with the ancient, many times considered, argument that anxiety dreams cannot express a wish. The author proudly concludes that the dream mirrors the varying need for rest of the nervous system; the contents have no significance. The book is not worth reading.

Vital Energetics: A Study in Comparative Basal Metabolism. By Francis G. Benedict, Director, Nutrition Laboratory, Carnegie Institution. Carnegie Institution of Washington Publication No. 503. Paper. Pp. 215, with 46 illustrations. Washington, D. C.: Carnegie Institution of Washington, 1938.

This is a comparative survey embracing basal metabolism measurements of all adult animal species studied at the Nutrition Laboratory. Considerable space is devoted to a painstaking consideration of the conditions necessary for comparative measurements of heat production, both intraspecific and interspecific, with analyses of the difficulties involved and the criteria employed. Data are presented for the various warm-blooded species on the basis of twenty-four hour heat production with reference to body weight. Then interspecific comparisons are made, expressed in terms of total heat production per kilogram of body weight and per square meter of surface area. The accompanying charts are plotted arithmetically. The warm-blooded animals considered range from the 8 Gm. mouse to the 4,000 Kg. elephant. Comparisons are made also between warm-blooded and cold-blooded animals at low cell temperatures and at 37 C. It is notable that among animals of different species but in the same weight group great differences in total heat production, as well as in metabolism expressed per kilogram and per square meter, obtain; for these discrepancies there is as yet no answer. Much emphasis is placed on the questionable validity of the surface area concept and considerable evidence is presented to indicate (p. 121) "how futile is the attempt to ascribe a constant value to the heat production of different animal species expressed per unit of surface area." Moreover, throughout the discussion the necessity is stressed of recognizing heat production rather than heat loss as the fundamental biologic activity involved in metabolic measurements. Finally, the factors which may be involved in the metabolic differences in and between species are considered and, in essence, best future progress is predicated on attempts to correlate differences in metabolic intensity with differences in bodily configuration and with differences in the composition, chemistry and distribution of the blood. A "unifying principle," if there is one which would serve as a common denominator for all animal species, is as yet an elusive quantity, and the key to the wide differences in the level and intensity of "vital energetics" is still not at hand. Indeed, one prime purpose of this monograph is to turn attention from the simple concept of heat loss as a unifying principle—which the author regards as fallacious—to the more subtle and profound differences between individuals and species, in which ultimately such a unifying principle may be discovered.

You Can Sleep Well: The A B C's of Restful Sleep for the Average Person. By Edmund Jacobson, M.D. Cloth. Price, $2. Pp. 269, with 40 illustrations. New York & London: Whittlesey House, McGraw-Hill Book Company, Inc., 1938.

The theory of sleep induced by relaxation is expounded by the author through the conversations of a mythical doctor and patient. The book is intended for laymen, although it is ironically stated in the preface that scientists and physicians may learn from it also. It is exceedingly difficult to review a work for popular consumption, especially one as breezily written as this, which skips lightly over controversial matters, conflicting evidence and other theories and which dogmatizes the author's own views. The lay reader is compelled to follow Jacobson's implied attitude of take it or leave it.

Del carcinoma primitivo broncopulmonar. Por Niceto S. Lóizaga, docente libre de Clinica de enfermedades infecciosas de la Facultad de ciencias médicas de Buenos Aires. Paper. Pp. 221, with illustrations. Buenos Aires: Libreria y Editorial "El Ateneo," 1938.

This monograph is based on an extensive review of the literature and on a study of forty-six cases observed at the Hospital Muniz during the last ten years. The full histories are given of twenty-one patients studied completely in all respects, clinically as well as anatomically. The structure of primary cancer of the lung is well illustrated by photographs. The bibliography covers some twenty pages. The book is a significant addition to the growing literature on cancer of the lung.

The Scientist in Action: A Scientific Study of His Methods. By William H. George, M.Sc., Ph.D., F.Inst.P., Honorary Lecturer in Physics, University of Sheffield, Sheffield, England. Cloth. Price, $3. Pp. 354, with 31 illustrations. New York: Emerson Books, Inc., 1938.

The choice of both British and American scientific clubs, this book deals with scientific research as a form of human action. The producers as well as the products of scientific research are examined and described. "The scientist himself becomes a part, not only of his apparatus, but of his results also. To talk about science without talking about the scientist is rapidly becoming meaningless. The research worker, as a pure-reason machine, is abandoned for the idea of a biological unit reaching to, and acting upon, an everchanging environment." The first part, on the scientific outlook, discusses qualities of scientific research (action, facts, the arrangement of facts, newness), description versus absolute truth, change and the uniformity of nature, the should-ought mechanism and assessment of value; the second part, getting scientific facts, the eyewitness's observation, scientific observation, pattern, the question whether facts are first seen in isolation, selection and abstraction; the third part, arranging scientific facts in chapters on order, laws and classification, pattern in action, the scientific theory, problems of theorizing, some factors in experimental technic and the future of experimental research. The fourth part, or conclusion, contains a personal explanation because of the stress laid on the "biologic factors" in research and a summary of the trends and conclusions of the discussion. The book is of extreme interest to those who are concerned with the methods and meaning of science. In a vigorous style it gives a clarifying and stimulating treatment of the scientist in action in research.

Biology for Pharmaceutical Students and Others. By S. Mangham, M.A., Professor of Botany, University College, Southampton, England, and A. R. Hockley, B.Sc., Lecturer in Zoology, University College, Southampton. Cloth. Price, $6.50. Pp. 613, with 299 illustrations. Baltimore: William Wood & Company, 1938.

Written primarily for students of pharmacy, this book is well suited to any one desiring a succinct account of the basic structural features and functions of plants and animals. It deals also with development, endocrine organs, vitamins, mendelism, heredity and evolution. The structure of flowering plants is fully presented. The book is amply illustrated with adequately

labeled diagrammatic figures, largely original and very well done. In its completeness, wide scope and abundance of illustrations this textbook of biology (in the sense of a combination of botany and zoology) is of unusual excellence.

Comparative Anatomy and Physio-Pathology of the Autonomic Hypothalmic Centres. By Dr. A. A. Boon. Acta Psychiatrica et Neurologica Supplementum XVIII. Paper. Pp. 129, with 22 illustrations. Copenhagen: Ejnar Munksgaard; Haarlem: De Erven F. Bohn, 1938.

In this volume the author summarizes the literature on his topic and confirms certain anatomic observations already well established. The book is of some value for quick reference to the literature but adds nothing of significance.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Compensability of Recurrence of Hernia Following Operative Repair.—In May 1932, the claimant sustained a "double hernia," which apparently was successfully corrected by an operation. He began his employment with the defendant company in August 1933. On May 21, 1934, as the result of strain in lifting a large piece of coal in the course of his employment in one of the defendant's mines, he sustained a bilateral inguinal hernia and a right femoral hernia. On June 11 an operation for the correction of these hernias was performed by a physician employed by the defendant company. The incisions "healed firmly" without any infection. On July 2, the claimant was discharged from the hospital where the operation had been performed and reported that he was able to return to work on August 6. In accordance with an agreement for compensation, the claimant was paid compensation up to August 6.

Subsequently, while outside of his employment, he felt a little pain following a forceful sneeze and thereafter another left inguinal hernia developed. The claimant then applied to the workmen's compensation board for reinstatement of the agreement for compensation on the ground that his disability had recurred. It was conceded that the sneeze was the immediate cause of the hernia. However, the claimant contended that he had sustained a recurrence of his hernia due to a weakened condition of his left abdominal wall following the operation. The defendant, on the other hand, contended that the claimant had fully recovered from the operation, that his abdominal wall had not been left in a weakened condition and that the claimant had not sustained a recurrence of his hernia but had sustained a new injury due to the sneeze which occurred outside of his employment, for which injury the defendant was in no way responsible. The board found that the claimant had "sustained a recurrence of the hernia on account of a physical weakness as a result of his previous hernial operation and due to the sneeze," fixed August 16 as the date of its recurrence and reinstated the compensation agreement. From a judgment of the court of common pleas, Allegheny County, affirming the award of the board, the employer appealed to the superior court of Pennsylvania.

The burden, said the superior court, rested on the claimant to prove that his hernia most probably would not have developed if his abdominal wall had not been in a weakened condition as a result of the operation. To support his claim for compensation, the claimant relied on the testimony of a physician who examined him following the alleged recurrence. This medical witness testified that based on his examination he was of the opinion that the claimant had sustained a recurrence of his hernia. After a herniotomy, he testified, there is a period of from eight to fourteen weeks, depending on the individual case, during which there is a definite weakness in the abdominal wall, which weakness is not a fault of the operative work but is due to the fact that the tissues are still "knitting." During this period a cough, sneeze or a lifting might produce a recurrence of a hernia. He frankly admitted that he could not state definitely whether the "healing process" had been completed in this case or whether the hernia was a new injury due to the sneeze or was attributable to a weakened condition of the abdominal wall. On the other hand, the company physician testified that a sneeze or anything that would increase the intra-abdominal pressure might produce a hernia even in an individual who had never had a hernia and that in his opinion the claimant did not have a weakened condition of his abdominal wall as a result of the operation and that the sneeze was a productive factor in the causation of the hernia.

Although, said the court, the testimony on behalf of the claimant was not as positive as might be desired, it could not be said that the finding of the board was unsupported by competent evidence. Furthermore, the board was at liberty, in arriving at its conclusion, to take into consideration the entire course of events following the claimant's discharge from the hospital. In the judgment of the court there was justification for reinstating the agreement for compensation. However, the court was of the opinion that the date of recurrence as fixed by the board, Aug. 16, 1934, was not supported by the evidence. The evidence merely showed that the hernia was not in existence on Sept. 27, 1934, but that it had developed prior to Dec. 1, 1934. The court concluded that there was no justification for reinstating the agreement as of any date prior to Sept. 27, 1934.

Accordingly, the court ordered that the judgment be modified and as modified affirmed.—*Roberts v. Hillman Coal & Coke Co. (Pa.), 200 A. 128.*

Society Proceedings

COMING MEETINGS

American Association for the Study of Goiter, Cincinnati, May 22-24. Dr. W. Blair Mosser, 133 Biddle St., Kane, Pa., Secretary.
American Association for Thoracic Surgery, Los Angeles, July 5-7. Dr. Richard H. Meade Jr., 2116 Pine St., Philadelphia, Secretary.
American Association of Genito-Urinary Surgeons, Williamsburg, Va., May 24-26. Dr. Charles C. Higgins, 2050 East 93d St., Cleveland, Secretary.
American Association of Industrial Physicians and Surgeons, Cleveland, June 5-8. Dr. V. S. Cheney, Armour and Company, Union Stock Yards, Chicago, Secretary.
American Bronchoscopic Society, Rye, N. Y., May 26. Dr. Lyman Richards, 319 Longwood Ave., Boston, Secretary.
American Dermatological Association, Montebello, Canada, May 31-June 3. Dr. Fred D. Weidman, University of Pennsylvania Medical Laboratories, Philadelphia, Secretary.
American Gynecological Society, White Sulphur Springs, W. Va., May 22-24. Dr. Richard W. TeLinde, 11 East Chase St., Baltimore, Secretary.
American Laryngological Association, Rye, N. Y., May 24-26. Dr. James A. Babbitt, 1912 Spruce St., Philadelphia, Secretary.
American Neurological Association, Atlantic City, N. J., June 5-7. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.
American Ophthalmological Society, Hot Springs, Va., June 5-7. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.
American Orthopedic Association, Buffalo, N. Y., June 5-8. Dr. Ralph K. Ghormley, 110 Second Ave. S.W., Rochester, Minn., Secretary.
American Otological Society, New York, May 22-23. Dr. Thomas J. Harris, 104 East 40th St., New York, Secretary.
American Proctologic Society, Brooklyn, N. Y., June 25-27. Dr. Curtice Rosser, 710 Medical Arts Bldg., Dallas, Texas, Secretary.
American Urological Association, White Sulphur Springs, W. Va., May 29-June 1. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.
Connecticut State Medical Society, New Haven, May 25-26. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
Maine Medical Association, Poland Springs, June 25-27. Dr. F. R. Carter, 22 Arsenal St., Portland, Secretary.
Massachusetts Medical Society, Worcester, June 6-8. Dr. Alexander S. Begg, 8 Fenway, Boston, Secretary.
Medical Library Association, Newark, N. J., June 27-29. Miss Janet Doe, 2 East 103d St., New York, Secretary.
Minnesota State Medical Association, Minneapolis, May 31-June 2. Dr. B. B. Souster, 11 West Summit Ave., St. Paul, Secretary.
Montana, Medical Association of, Butte, June 28-30. Dr. Thomas L. Hawkins, 50 North Main St., Helena, Secretary.
National Gastroenterological Association, New York, June 1-2. Dr. G. Randolph Manning, 1819 Broadway, New York, Secretary.
National Tuberculosis Association, Boston, June 26-29. Dr. Charles J. Hatfield, 50 West 50th Street, New York, Secretary.
New Hampshire Medical Society, Manchester, June 8-9. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.
New Jersey, Medical Society of, Atlantic City, June 6-8. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
Pacific Coast Oto-Ophthalmological Society, San Francisco, June 19-22. Dr. C. Allen Dickey, 450 Sutter St., San Francisco, Secretary.
Pacific Northwest Medical Association, Spokane, Wash., June 26-29. Dr. C. W. Countryman, 407 Riverside Avenue, Spokane, Wash., Secretary.
Rhode Island Medical Society, Providence, June 7-8. Dr. Guy W. Wells, 124 Waterman St., Providence, Secretary.
Society of Surgeons of New Jersey, Elizabeth, May 25. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.
Vancouver Medical Association Summer School, Vancouver, B. C., June 6-9. Dr. W. W. Simpson, 203 Medical Dental Bldg., Vancouver, B. C., Secretary.
West Virginia State Medical Association, White Sulphur Springs, July 10-12. Mr. Joe W. Savage, Public Library Bldg., Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1929 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

23: 143-276 (March) 1939

Choice of Bismuth Preparation: Clinical Résumé of Excretion and Retention Studies. H. N. Cole, T. Sollmann and Katharine Henderson, in collaboration with G. W. Binkley, H. Connors, G. Cooper, W. R. Lover, H. Reichle, W. F. Schwartz, D. Seecof and M. Sullivan, Cleveland.—p. 143.

*Treponemicidal Activity of Arsphenamine and Neoarsphenamine in Vitro, with Special Reference to Citrated Blood and Suggested Method for Prevention of Transfusion Syphilis. Clara C. Kast, C. W. Peterson and J. A. Kolmer, Philadelphia.—p. 150.

*Acquired Syphilis in Children: Epidemiologic and Clinical Study. F. R. Smith Jr., Baltimore.—p. 165.

Id.: Case Reports on Four Sisters. A. G. Schoch and W. E. Long, Dallas, Texas.—p. 186.

Acetarsone Orally in Treatment of Acquired Syphilis in Adults. H. M. Robinson and H. M. Robinson Jr., Baltimore.—p. 188.

Treatment of Acute Anterior Urethritis with Silver Picrate. F. Knight and H. A. Shelanski, Philadelphia.—p. 201.

Gonococcic Endocarditis: Report of Case with Autopsy. W. M. Brunet, Chicago.—p. 207.

Sobisminol (Sodium Bismuthate Soluble) in Treatment of Experimental Rabbit Syphilis. C. Shaw, J. E. Kemp and Elsie Mae Fitzgerald, Chicago.—p. 210.

Acquired Syphilitic Interstitial Keratitis: Report of Two Cases. H. Pariser, Philadelphia.—p. 214.

Observations on Incidence of Latent Paroxysmal Hemoglobinuria as Evidenced by the Donath-Landsteiner Phenomenon. L. V. Dill, with technical assistance of Ida Douvros and C. E. Isenhour, Durham, N. C. —p. 220.

Erythema of the Ninth Day Syndrome Associated with Bismuth Therapy. L. Goldman and G. E. Clarke, Cincinnati.—p. 224.

Acute Fatal Liver Necrosis Following Tryparsamide Administration: Report of Two Cases. H. L. Traenkle and F. A. Dolce, Buffalo.—p. 228.

Gumma of the Brain. B. J. Alpers, Philadelphia.—p. 233.

Spirocheticidal Activity of Arsphenamine.—Because of the high spirocheticidal activity of arsphenamine (disodium) and neoarsphenamine, Kast and her co-workers advise that as a means for the prevention of transfusion syphilis either compound be added to citrated human blood in a final dilution of 1:10,000 whenever syphilis of the donor is suspected or known to be present. Ill or toxic effects have not been observed in eight patients.

Acquired Syphilis in Children.—Smith describes some of the clinical and epidemiologic features of acquired syphilis in 125 children 10 years of age or less. They are authenticated cases that the author collected from the larger pediatric clinics of the eastern and southern United States. In the Johns Hopkins Hospital only forty-five cases of early acquired syphilis in children less than 11 years of age were observed in seventeen years (1920-1937), during which time there were ninety cases among children from 11 to 15 years of age and 4,487 cases among adults. The disease was acquired through attempted sexual intercourse by forty-three, through kissing by fifteen, through a household contact by fourteen and through blood transfusion by nine; on forty-four acquisitions there are no data. There were approximately twice the number of females affected as males. This difference became more marked with advancing age. In most instances of infection by illicit sexual intercourse a female child was infected by an adult male. Also the risk of infection from casual household contact seems to be greater for female than for male children. Most of the patients were from families belonging to the lower economic groups whose hygienic habits were poor and in whose homes overcrowding was prevalent. The clinical characteristics of acquired syphilis in children do not differ materially from those of acquired syphilis in adults. Treatment produced satisfactory clinical and serologic results. The risk of acquiring syphilis by the ordinary contacts between individuals living or working in the same house seems to be small, but when the contact is intimate as in the case of young children with their mother or nurse the risk is sufficient to have a practical significance. Infection by playmate contact is usually acquired by secretive infantile sex practices rather than by the ordinary relationships of play. The nine cases of transfusion syphilis emphasize the necessity for careful pretransfusion examination of all donors, including parents and relatives.

Annals of Internal Medicine, Lancaster, Pa.

12: 1175-1402 (Feb.) 1939

Prophylaxis in Allergy. R. A. Kern, Philadelphia.—p. 1175.

*Chronic Brucellosis (Undulant Fever): Analytic Study of the Positive Reactors Among School Children. F. E. Angle and W. H. Algie, Kansas City, Kan.—p. 1189.

Variation of Blood Pressure with Skeletal Muscle Tension and Relaxation. E. Jacobson, Chicago.—p. 1194.

Human Autonomic Pharmacology: XV. Effect of Acetyl-Beta-Methylcholine Chloride (Mecholyl) by Iontophoresis on Arterial Hypertension. J. Loman, M. F. Lesses and A. Myerson, Mattapan, Mass.—p. 1213.

Low Chest and Upper Abdominal Pain. W. M. Ballinger, Washington, D. C.—p. 1223.

Chemical Nature of Heart Failure. G. Herrmann and G. M. Decherd Jr., Galveston, Texas.—p. 1233.

*Macrocytic Anemia, Other Than Pernicious Anemia, Associated with Lesions of the Gastrointestinal Tract. C. C. Sturgis and S. M. Goldhamer, Ann Arbor, Mich.—p. 1245.

Tolerance and Toxicity of Insulin: II. With Forced Administration of Carbohydrate. F. M. Allen, New York.—p. 1263.

Psychotherapy, with Special Reference to Use of Hypnosis. J. L. McCartney, Philadelphia.—p. 1279.

The Problem of Rheumatism and Arthritis: Review of American and English Literature for 1937 (Fifth Rheumatism Review). P. S. Hench, Rochester, Minn.; W. Bauer, Boston; M. H. Dawson, New York; F. Hall, Boston; W. P. Holbrook, Tucson, Ariz., and J. A. Key, St. Louis.—p. 1295.

Chronic Brucellosis in School Children.—Angle and Algie found evidence of chronic illness (the persistence of any two of the following symptoms: nervousness, headache, rheumatic symptoms or constipation) in 179 of the 462 positive brucellergin reactors, negative tuberculin reactors studied in 1937. The symptoms persisted in 57.5 per cent of the 139 children reexamined in 1938. Control studies indicated that there was a higher percentage of children with chronic illness in the group under investigation. Replies received from twenty-six professors of immunology indicated that the presence of agglutinins, opsonins and allergic cutaneous tests are specific reactions for present or past Brucella infection. Immunologic evidence of Brucella infection does not mean disease. The diagnosis of chronic brucellosis depends on clinical signs plus some positive laboratory data. The ambulatory and subclinical types of Brucella infection are apparently not uncommon.

Macrocytic Anemia Associated with Gastrointestinal Lesions.—During the last eleven years Sturgis and Goldhamer have observed a large group of patients with pernicious anemia during the course of which they encountered a number of patients with macrocytic anemia who illustrate strikingly the various types of gastrointestinal lesions which may cause such an alteration in the blood. One reason which indicates that intestinal lesions are responsible for this type of anemia is the disappearance of the anemia when the intestinal lesion is repaired. In one case, for example, the erythrocyte count returned to normal following resection of the small intestine for partial obstruction, at which time the patient was not receiving any antianemic therapy. It is also of significance that the anemia reappeared when the partial obstruction recurred. Further evidence that the group of patients which was studied did not have a true addisonian anemia which by chance was associated with some gastrointestinal lesions is that in three of the ten patients considered free hydrochloric acid was present in the gastric secretions. Also five of the remaining seven patients did not have paresthesia of the hands and feet, which is present in 90 per cent of patients with pernicious anemia. Furthermore, only one patient had recurrent glossitis, which is present in approximately 65 per cent of patients with addisonian anemia. Atrophy of the tongue was not present in the eight patients in whom this sign was looked for. This sign is present in about half of the patients with pernicious anemia. It is not difficult

to understand why a macrocytic anemia develops in some patients following partial resection of the stomach. The intrinsic factor which is essential to maturation of the erythrocytes is undoubtedly secreted by the glands in the gastric mucosa. It appears to be a logical assumption that the development of a macrocytic anemia following operations on the stomach depends almost entirely on how much of the stomach remains following the operation. The association of this type of anemia with the presence in patients of multiple intestinal anastomoses can readily be explained on the ground that the intestinal contents may pass through only a small portion of the small intestine in such cases and, therefore, the likelihood of absorbing a normal amount of the active principle would be diminished. It is somewhat more difficult to understand why this type of anemia should develop in a patient with an intestinal stricture or partial obstruction, such as existed in one of the present cases, as only a relatively small portion of the small intestine was involved in the pathologic process. A plausible assumption would be that even a localized lesion may in some manner affect the entire intestinal tract in such a way as to destroy or prevent the absorption of the active principle. It appears that from two to five years is required for macrocytic anemia to develop following resection of the stomach, that is, to reach a stage severe enough to produce symptoms. The length of time elapsing varies according to several factors. First, it is dependent on the extent to which the gastric and intestinal function is impaired; secondly, it is affected by the amount of reserve erythrocyte maturing material which is stored in the liver and perhaps elsewhere in the body. Other conditions which may possibly be of importance are the age of the patient and the presence of infections. For example, the reserve supply of the active principle would be consumed more rapidly in an elderly patient than in a younger one or in one with an active infection, and on this account a macrocytic anemia would develop more quickly in such a patient.

Archives of Neurology and Psychiatry, Chicago

41: 435-658 (March) 1939

Gliomas of the Pons: Clinical and Pathologic Characteristics. B. J. Alpers and J. C. Yaskin, Philadelphia.—p. 435.

Pathologic Picture of Thujone and Monobromated Camphor Convulsions: Comparison with Pathologic Picture of Human Epilepsy. L. Opper, New Haven, Conn.—p. 460.

"Silver Cells" and "Spirochete-like" Formations in Multiple Sclerosis and Other Diseases of the Central Nervous System. G. B. Hassin and I. B. Diamond, Chicago.—p. 471.

Quantitative Absorption of Phenolsulfonphthalein from Subarachnoid Space. W. J. Gardner and W. A. Nosik, Cleveland.—p. 484.

*Return of Cognitive Conscious Functions After Convulsions Induced with Metrazol. L. H. Cohen, Worcester, Mass.—p. 489.

Ligation of the Left Anterior Cerebral Artery: Its Hazards and Means of Avoidance of Its Complications. J. L. Poppen, Boston.—p. 495.

Action of Metrazol (Pentamethylenetetrazol) on Hypothalamus of the Cat. J. H. Masserman, with technical assistance of E. W. Haertig, Chicago.—p. 504.

Cardiac Activity During Epileptic Seizures. T. C. Erickson, Montreal.—p. 511.

*Electro-Encephalography in Clinical Neurology: Its Value in Routine Diagnosis. D. Williams, London, England, and F. A. Gibbs, Boston.—p. 519.

Neurogenic Tumors Arising from the Sacrum. A. W. Adson, F. P. Moersch and J. W. Kernohan, Rochester, Minn.—p. 535.

Localized Nonsuppurative Encephalitis Adjacent to a Focus of Infection in the Skull. M. Atkinson, New York.—p. 556.

*Tuberous Sclerosis: Relief of Epileptic Symptoms by Radiation Therapy. A. B. Friedman, Brooklyn.—p. 565.

Analysis of the Thinking Disorder in a Case of Schizophrenia. Eugenia Hanfmann, Chicago.—p. 568.

Bilateral Frontal Lobectomy: Follow-Up Report of Case. R. M. Brickner, New York.—p. 580.

Sign of Facial Palsy. R. Wartenberg, San Francisco.—p. 586.

Return of Consciousness After Induced Convulsions.—Cohen studied the return of the cognitive conscious functions in the period following convulsive seizures. The studies were carried out on schizophrenic patients during metrazol therapy. The functions of esthesia, prosexia, gnosia, praxia and mnesia reappear in the order given. It is suggested that these studies be extended, since they have a bearing on the general problem of the nature of consciousness. Furthermore, it appears that metrazol offers a safe and convenient means for the study of the interruption and normalization of the stream of consciousness.

Electro-Encephalography in Clinical Neurology.—Williams and Gibbs state that the electro-encephalogram has been used in the routine investigation of patients in a large neurologic and neurosurgical service over a period of ten months. The site and character of foci of abnormal cortical rhythms were determined by the method described by Walter. In 105 cases in which intracranial lesions were suspected there was a close correlation between the actual position of the lesions and that predicted by the electro-encephalograms in the fifty cases in which the pathologic process was demonstrated. The lesion was demonstrated at operation or necropsy in thirty-five of these fifty cases, and in another fifteen cases clinical evidence of localization was strong or was supported by the results of previous exploration, by x-ray evidence or by other signs of the lesion, such as a visible mass, skull defect or scalp wound, so that the diagnosis could be made with accuracy. In forty-one cases in which no cerebral lesion was demonstrated in the electro-encephalograms, subsequent clinical investigation gave negative results. In the remaining fourteen cases the position of predicted cerebral lesions could not be confirmed through lack of clinical and pathologic data. It is concluded that the method has great practical value as a diagnostic procedure in routine neurologic practice.

Tuberous Sclerosis.—Friedman reports a case of tuberous sclerosis without mental deterioration treated with roentgen rays. The epileptic symptoms were relieved. The patient has remained well for more than two and a half years.

Archives of Surgery, Chicago

38: 397-598 (March) 1939

Congenital Cystic Dilatation of the Bile and Pancreatic Ducts: Necropsy Thirteen Years After Hepaticoduodenostomy. G. L. McWhorter, Chicago.—p. 397.

Clinical Significance of Calorimetric Changes in the Lower Extremity. B. Lipshutz and M. Naide, Philadelphia.—p. 412.

Histologic and Histochemical Structure of the Normal Thyroid Gland. A. E. Hertzler, Halstead, Kan.—p. 417.

Intracranial Hypertension of Unknown Cause: Cerebral Edema. A. L. Sahs and O. R. Hyndman, Iowa City.—p. 428.

Swelling of the Brain in Cases of Injury to the Head. P. Shapiro and H. Jackson, Chicago.—p. 443.

Experimental Production of Tumors of the Brain with Shope Rabbit Papilloma. B. Woodhall, R. W. Graves and J. W. Beard, Durham, N. C.—p. 457.

The Superior Colliculi: Their Function as Estimated from a Case of Tumor. O. R. Hyndman and W. J. Dulin, Iowa City.—p. 471.

*Hemangioma of Joints: Report of Five Cases. G. E. Bennett and M. C. Cobey, Baltimore.—p. 487.

Atresia Ani Urethralis: Report of Case. L. A. Thunig, Brooklyn.—p. 501.

*Ethyl Alcohol as Germicide. P. B. Price, Baltimore.—p. 528.

Parathyroidectomy for Raynaud's Disease and Scleroderma: Late Results. Alice R. Bernheim and J. H. Garlock, New York.—p. 543.

Regional Redistribution of Blood in Experimental Secondary Shock. H. A. Davis, Memphis, Tenn., and R. J. Jermstad, St. Joseph, Mo.—p. 556.

Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Budapest, Hungary; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson and J. T. Priestley, Rochester, Minn.; E. Wildbolz, Berne, Switzerland, and V. J. O'Conor, Chicago.—p. 581.

Hemangioma of Joints.—Bennett and Cobey present five cases of hemangioma of the knee joint. The age at onset varied from 18 months to 18 years and the duration of symptoms from ninety minutes to eight years. Trauma was not a factor. Swelling was present in all cases, with pain and recurring attacks of limp and pain on motion in four. The palpable elastic, spongy mass, compressible and distensible, was evident in only two. There was tenderness in two. Muscular atrophy and crepitation were present in only one case. Two of the patients received no treatment before operation, two were treated with rest in bed and one was treated with bandages and casts. The roentgenograms throughout failed to show any abnormality except for erosion of the cartilage in one case. In the first case complete excision was attempted, hemorrhage and infection followed, and finally amputation had to be performed. Complete excision was possible in only one case, in which the tumor was pedunculated. Biopsy followed by radium or roentgen therapy was carried out in the other three cases, with practically complete recovery. The final diagnosis of hemangioma was made and verified by

histologic study in the first four cases. The signs, symptoms and course made the diagnosis certain in the last case.

Ethyl Alcohol as Germicide.—Using original quantitative tests of bactericidal activity, Price has found ethyl alcohol, within certain narrow limits of concentration, to be strongly germicidal, both in vitro and on the skin. Exactly 70 per cent by weight (which has no constant volume per cent equivalent) is the most effective concentration. Even slight variations from this particular strength lessen its bactericidal power. Seventy per cent by volume is almost useless. Degermation of skin by alcohol takes place at a regularly logarithmic rate. Each minute the skin is kept in 70 per cent (by weight) solution without friction is equivalent to about six and one-half minutes of scrubbing in water. Friction increases the speed of degermation. Against test bacteria in suspension, 70 per cent (by weight) alcohol acts even more strongly and rapidly. Higher and lower concentrations are less effective. The difference between the degerming effects of alcohol on skin and in vitro are thought to be due largely, if not entirely, to differences in degree of contact between germicide and bacteria. This explains also why friction increases the germicidal action of alcohol on skin. Evaporation weakens 70 per cent alcohol and lessens its bactericidal power. A routine method of preoperative preparation of the hands has been evolved which, while simple, is a great deal more effective than technics in use at present in many leading hospitals. Seventy per cent by weight alcohol is recommended also for use in preparing the field of operation and in disinfecting contaminated hands.

Canadian Medical Association Journal, Montreal

40: 213-318 (March) 1939

*Prevention of Silicosis by Metallic Aluminum: II. J. J. Denny, W. D. Robson, Schumacher, Ont., and D. A. Irwin, Toronto.—p. 213.
Clinical Significance of a Lump in the Breast. E. M. Eberts, Montreal.—p. 228.
Leukoplakia and Allied Mouth Conditions. D. Quick, New York.—p. 234.
Low Back Pain and Sciatica. J. A. L. Walker, Windsor, Ont.—p. 240.
Carcinoma of the Sigmoid Colon (Radiologic Study). A. C. Singleton and M. R. Hall, Toronto.—p. 247.
*Abolition of Clinical Tuberculosis by Anticipation and Control. W. Ogden, in collaboration with G. C. Anglin, M. Brown, A. H. W. Caulfeild, Edith Gordon, T. G. Heaton, W. C. Kruger, E. L. Sexsmith, Margaret S. Thompson and T. R. Welwood, Toronto.—p. 253.
Diabetes Mellitus with Marked Hypercholesterolemia and Signs Simulating Cerebral Thrombosis: Case. I. M. Rabinowitch, Montreal.—p. 257.
Changing Conditions for Cesarean Section. R. T. Weaver, Hamilton, Ont.—p. 259.
Hernia. R. K. Magee, Peterborough, Ont.—p. 264.
Intravenous Glucose Tolerance Curve as Index of Liver Function and Liver Replacement Therapy in Cases of Hepatic Insufficiency. R. Wilson, Vancouver, B. C.—p. 268.

Prevention of Silicosis by Metallic Aluminum.—In a previous article Denny and his co-workers showed that the addition of small quantities of metallic aluminum powder almost completely inhibited the solubility of silicious material in the beaker. Silicosis developed in six rabbits exposed to quartz dust for six months. The condition did not develop in seven rabbits exposed to quartz dust plus 1 per cent metallic aluminum powder for the same period. The authors state that metallic aluminum on being converted into hydrated aluminum reduces the toxicity of quartz in tissues by flocculation, by absorbing silica from solution, but chiefly by coating the quartz particles with an insoluble and impermeable coating. This coating has been definitely identified as a gelatinous hydrated alumina, which on drying forms the crystalline alpha aluminum monohydrate boehmite. Other silicious materials when treated in a similar manner to quartz and aluminum in water appear to be coated by the precipitated gelatinous aluminum hydrate. Animals whose lungs on analysis contained 1 per cent or more of metallic aluminum have shown no evidence of silicosis after being exposed to quartz dust up to periods of seventeen and a half months. This was in direct contrast to well developed silicosis in the quartz control rabbits in seven months. In lungs having less than 1 per cent aluminum in which fibrosis is present there is no demonstrable evidence of hydrated aluminum in the fibrotic areas. In lungs in which the hydrated aluminum is shown on staining to be intimately and uniformly mixed with the silica particles, fibrosis has never been found. Aluminum dust for the prevention of silicosis should be of a particle size below 5 microns and grease free. It should be uniformly mixed in any inhaled dust and bear a definite percentage to this dust at all times. To prevent silicosis, aluminum dust may be inhaled daily independently of the silicious dust. The aluminum dust must be sufficiently concentrated in the inhaled dust to provide a minimum concentration in the lung of 1 per cent at all times. The inhalation of aluminum dust in large quantities over long periods of time showed no effect on the general health of the animals and no evidence of toxicity or damage to tissues. The concentration of aluminum dust necessary to prevent silicosis is hundreds of times below its explosive concentration.

Abolition of Clinical Tuberculosis.—Ogden and his collaborators present a plan for following contacts and normals through which an attempt is made to detect "preclinical tuberculosis," thus reducing the incidence of the disease and at the same time aiding diagnosis in the really minimal stages of those getting through the preclinical phase and acquiring actual disease. Over a period of fifteen years a total of 1,300 known contacts, tuberculin positive, and 400 normals have been under observation. Of those who followed the prescribed scheme, in not one has tuberculosis developed. When the contact series includes those whose observation was irregular, the disease developed in only 4.15 per cent (fifty-four) of the total. The incidence in other contact series ranges from 10 to 40 per cent, averaging from 20 to 25 per cent. Known tuberculosis contacts should be tested, first by tuberculin; then, if they are positive, this should be followed by serial serologic examination. All normals not known to be contacts should be tested, because exposure and infection frequently take place without contact being known. When they are tuberculin positive they are then serologically tested as contacts, because such they must have been. Serologic tests differentiate between those who are liable to develop tuberculosis and those who are not. Those thus found liable to develop tuberculous disease are advised accordingly.

Endocrinology, Los Angeles

24: 297-434 (March) 1939

*Observations on Occurrence of an Antidiuretic Substance in Urine of Patients with Preeclampsia and Eclampsia. H. M. Teel and D. E. Reid, Boston.—p. 297.
Hormone Influences on Excitability of Muscular Protoplasm of the Rat's Uterus. F. C. Katzenstein and S. Soskin, Chicago.—p. 311.
Gonadotropic Hormone: Clinical Application of Extraction Methods for Assay Purposes. C. G. Heller and Emily J. Heller, Madison, Wis.—p. 319.
Stability of Testis Hormone. D. R. McCullagh, Cleveland.—p. 326.
Excretion and Fate of Androgens: Excretion of Injected Testosterone and Its Various Derivatives. C. D. Kochakian, Rochester, N. Y.—p. 331.
Daily Excretion of Urinary Androgens in Normal Children. I. T. Nathanson, Lois E. Towne and J. C. Aub, Boston.—p. 335.
*Suppressive Action of Testosterone Propionate on Menstruation and Its Effect on Vaginal Smears. G. N. Papanicolaou, H. S. Ripley and E. Shorr, New York.—p. 339.
*Treatment of Female Menopause with Male Sex Hormone. L. Kurzrok, C. H. Birnberg and S. Livingston, Brooklyn.—p. 347.
Progesterone Is Androgenic. R. R. Greene, M. W. Burrill and A. C. Ivy, Chicago.—p. 351.
Creatine-Creatinine Metabolism and Hormones: Anterior Pituitary Hormones, Theelin and Testosterone Propionate. P. Pizzolato and H. H. Beard, New Orleans.—p. 358.
Persistence of Four to Five-Day Activity Cycles in Vitamin A Deficient Rats with Constant Cornification of the Vaginal Epithelium. C. P. Richter and B. Barelare Jr., Baltimore.—p. 364.
Salt Taste Thresholds of Normal and Adrenalectomized Rats. C. P. Richter, Baltimore.—p. 367.
Renal Lesion in Hyperparathyroidism. W. A. D. Anderson, Memphis, Tenn.—p. 372.
Extent of Regeneration of the Enucleated Adrenal Gland in the Rat as Influenced by Amount of Capsule Left at Operation. D. J. Ingle and G. M. Higgins, Rochester, Minn.—p. 379.
*Thyroid in Treatment of Menstrual Irregularities. Ruth C. Foster and Madeline J. Thornton, Madison, Wis.—p. 383.
Vitamin A Deficiency in Disease of Thyroid Gland: Its Detection by Dark Adaptation. M. G. Wohl and J. B. Feldman, Philadelphia.—p. 389.
Thyroid Function in Diabetes Insipidus in the Rat. H. G. Swann and P. E. Johnson, Chicago.—p. 397.
Endocrinologic and Metabolic Observations in Exfoliative Dermatitis. W. J. Hanes and R. S. Crew, Philadelphia.—p. 404.
Present Day Status of Migraine Therapy. Mary E. O'Sullivan, New York.—p. 414.

Antidiuretic Substance in Urine in Eclampsia.—Teel and Reid state that concentrates prepared from the urine of preeclamptic and eclamptic women during the period of acute water retention exert marked antidiuretic effects on water diuresis in rats. The antidiuretic effect of a concentrate prepared from the

urine of an eclamptic patient after she had taken 1,400 cc. of water by mouth persisted. Similarly prepared concentrates from the urine of normal pregnant women during the last trimester of pregnancy and at the time of delivery exert little or no antidiuretic effect. However, if normal pregnant women are sufficiently dehydrated by withholding water, the urine contains amounts of antidiuretic substance comparable to those found in preeclamptic and eclamptic women. The antidiuretic principle recovered from the urine of preeclamptic and eclamptic women resembles solution of posterior pituitary. This substance acting on the kidney in abnormal amounts, or perhaps inadequately opposed by an antagonist, offers an immediate mechanism for the retention of water in preeclampsia and eclampsia.

Suppressive Action of Androgen on Menstruation.—The inhibitory action of the male hormone on human menstruation is illustrated by Papanicolaou and his associates by a case that they report. This is in accord with previous studies on lower mammals and primates. The absence of uterine bleeding and the persistence of an atrophic vaginal smear type during the period of treatment with the male hormone indicate that the cyclic uterine and vaginal functions were temporarily suppressed. Whether the male hormone acts directly on the ovaries or indirectly through its action on other endocrine glands is still uncertain. That menstrual functions can be inhibited in human beings by androgen, with the induction of a temporary sterility, is of considerable therapeutic significance. A beneficial effect on excessive and uncontrolled uterine bleeding has already been reported. This cessation of bleeding was associated with the development of an atrophic endometrium, an observation which has been subsequently confirmed. This endometrial atrophy is the uterine counterpart of the changes in the vaginal epithelium which underlie the atrophic vaginal smear that the authors observed following the administration of the male hormone. The hormone also appears to be of therapeutic help in the treatment of the menopausal syndrome. Once the atrophic smear is reached, the dose can be reduced to the minimal one which will maintain it. While the authors noticed no masculinizing effects of the male hormone in their patient, a recent study reports changes such as enlargement of the clitoris, marked vulval hyperemia and temporary lowering of the voice with intensive androgenic therapy. Menstruation occurred spontaneously in their patient twenty-eight days after androgenic therapy was stopped.

Treatment of Menopause with Androgen.—By the administration of from 30 to 50 mg. of testosterone propionate Kurzrok and his co-workers were able to ameliorate completely or almost completely the symptoms of the menopause in twenty-one cases. The substance produced no effect on the breasts, in that no patient complained of mastalgia. One patient with arthritis accompanying the menopause was benefited. There were no instances of itching or discharge due to the male sex hormone. Two cases of Trichomonas vaginalis infestation with pruritus responded to treatment with 25 per cent saline douches. Several of the younger women who had had a surgical menopause with resulting markedly severe symptoms responded fully as well as those in whom the menopause was spontaneous. One patient, with severe diabetes, was relieved of her flushes and sweats without any effect on the status of the diabetes. A few patients complained of localized pruritus on one occasion only, at the site of injection. Three patients had been treated previously with large doses of estradiol benzoate after a radiation menopause, with subsequent uterine bleeding; none of these women had any bleeding following administration of the male hormone.

Thyroid for Menstrual Irregularities.—Foster and Thornton treated fifty patients having menstrual irregularities with desiccated thyroid. The women have been observed for a period of from one to four years. Their ages have ranged from 16 to 34 years. With a few exceptions, only those who showed no pathologic changes in the pelvis have been treated. They all had basal metabolism rates below zero (from —1 to —33) the average being —15. Of the twenty-five patients with dysmenorrhea, seventeen had complete relief, five partial relief and three no relief. Of the seventeen patients with oligomenorrhea, all reported definite relief as long as they continued taking thyroid. Several of this group tried going without treatment during the summer vacation but returned in the fall asking to resume treatment because their symptoms had recurred. All stated that they felt much better when having their regular periods. The few patients in this series complaining of menorrhagia and metrorrhagia responded to thyroid therapy in a most satisfactory manner. Of four patients who complained of marked irritability prior to menstruation two obtained partial relief, enough so that they did not want to stop thyroid medication. One had complete relief and one noticed no difference. Thyroid was stopped several times but always with a recurrence of the symptoms.

Iowa State Medical Society Journal, Des Moines

29: 91-142 (March) 1939

Useful Anesthetic Methods and a System of Transfusion of Blood for Use in General Practice. R. C. Adams, Rochester, Minn.—p. 91.
Brachial Block Anesthesia. L. J. Miltner, Davenport, and C. L. Chao, Peiping, China.—p. 94.
Diabetes and Its Management: Review of 366 Cases. E. B. Winnett, Des Moines.—p. 98.
*Prothrombin Test and Vitamin K Treatment for Bleeding Tendency in the Jaundiced Patient. P. F. Olson, Dubuque.—p. 103.
Treatment of Common Foot Disorders. W. R. Hamsa, Omaha.—p. 105.
Kidney Function Tests. W. C. Egloff, Mason City.—p. 110.

Prothrombin Test and Vitamin K for Bleeding.—Olson reports the value of vitamin K in a patient who had been intermittently jaundiced for five months and apparently completely jaundiced for three months. Preoperatively, for obstruction of the common duct, she was given intravenous dextrose and a blood transfusion. At operation a diverticulum of the common duct was encountered and a calcareous obstruction at the ampulla of Vater was relieved. The duct was closed over a T tube, from which bile promptly flowed. Unusual bleeding was encountered at the time of operation and oozing occurred for several days after the operation. Six days after operation a severe hemorrhage occurred. This was controlled by a blood transfusion but the oozing recurred, and four days later another serious hemorrhage requiring transfusion again occurred. A prothrombin bleeding time after the method of Quick was 200 seconds. Vitamin K was given, two capsules being administered orally three times a day after meals. Each capsule was accompanied by 0.32 Gm. of bile salts. The prothrombin bleeding time was determined three days later and found to be 120 seconds. No further hemorrhage occurred and the oozing from the wound was decreasing. Seven days after the continued use of vitamin K the prothrombin bleeding time was reduced to thirty-eight seconds, which was comparable to a normal control, and all bleeding had stopped. The convalescence henceforth was uneventful. The author believes that, in jaundiced patients with an elevated prothrombin bleeding time, vitamin K should be administered prophylactically preoperatively and postoperatively until such time as the liver shall be able to elaborate concentrated bile into the intestinal tract and until such time as a balanced diet can be consumed.

Journal of Clinical Investigation, New York

18: 171-256 (March) 1939

*Gonadotropic Hormone: Urine Assays of Normally Cycling, Menopausal, Castrated and Estrin Treated Human Females. C. G. Heller and Emily J. Heller, Madison, Wis.—p. 171.
Control of Methemoglobinemia with Methylene Blue. W. B. Wendel, Memphis, Tenn.—p. 179.
Water Exchange of Premature Infants—Comparison of Metabolic (Organic) and Electrolyte (Inorganic) Methods of Measurement. H. H. Gordon, S. Z. Levine, Eleanor Marples, Helen McNamara and Helen R. Benjamin, New York.—p. 187.
Experimental Hyposthenuria. J. M. Hayman Jr., N. P. Shumway, P. Dumke and M. Miller, Cleveland.—p. 195.
*Further Observations on Occurrence of Rheumatic Manifestations in the Families of Rheumatic Patients. R. L. Gauld, Baltimore; A. Ciocco, Washington, D. C., and Frances E. M. Read, Baltimore.—p. 213.
Autologous and Homologous Transfusion of Human Ascitic Fluid. H. A. Davis and J. F. Blalock Jr., Memphis, Tenn.—p. 219.
Blood Flow and Vasomotor Reactions in Hand, Forearm, Foot and Calf in Response to Physical and Chemical Stimuli. P. Kunkel, E. A. Stead Jr. and S. Weiss, Boston.—p. 225.
Electrolyte Balances During Artificial Fever, with Special Reference to Loss Through the Skin. E. H. Keutmann, S. H. Bassett and S. L. Warren, Rochester, N. Y.—p. 239.
Changes in Pulmonary Volume Following Lobectomy for Bronchiectasis. G. E. Lindskog, New Haven, Conn.—p. 251.

Gonadotropic Content of Urine.—The Hellers determined the gonadotropic content of the urines from sixty-six menopausal patients. It was found that their potency was not related to the presence or absence of symptoms, age, hysterectomy or involution. No difference in gonadotropic potency was found

between menopausal women with symptoms and senile women, castrated women or menopausal women without symptoms. Urinary gonadotropic concentration was low in women with regular normal menstrual cycles, high in menopausal women in whom cycles had ceased and intermediate in menopausal women with irregular cycles. Treatment with estrogen alleviated the vasomotor symptoms of fifteen menopausal women but failed to reduce their gonadotropic potency concurrently. Continued treatment with estrogen caused a slight reduction in potency but failed to suppress it by significant amounts.

Rheumatic Manifestations in Relatives of Rheumatic Patients.—Gauld and his colleagues studied the high incidence of rheumatic disease in the families of ninety-six rheumatic children. The percentage of persons with a rheumatic history who had parents with a similar history was found to be consistent in two generations of these families and was 3.7 times as high as was found in the families of a control group of normal children. The offspring of the grandparents of the rheumatic and control persons were studied to see whether any relationship was present between the type of mating with respect to rheumatic disease and the percentage of children who were rheumatic. When one or both parents had a history of rheumatic manifestations (rheumatic fever or carditis or chorea) a greater percentage of the offspring was rheumatic than was found in the offspring of parents who had no history of rheumatic disease. The percentage of rheumatic manifestations was found to be almost twice as high in female offspring of rheumatic mothers as in the male offspring of these mothers. A greater percentage of persons with rheumatic disease was found among the maternal aunts and uncles than was found among the paternal aunts and uncles of the rheumatic cases. The data suggest that a hereditary constitution may play a part in the predisposition to this disease. The evidence, however, does not exclude the possibility that infection plays an important part and that exposure may be the predominating factor.

Journal of Experimental Medicine, New York

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Virus Disease of Cats, Principally Characterized by Aleukocytosis, Enteric Lesions and Presence of Intranuclear Inclusion Bodies. W. D. Hammon and J. F. Enders, Boston.—p. 327.

Studies on Antibacterial Immunity Induced by Artificial Antigens: I. Immunity to Experimental Pneumococcic Infection with Antigen Containing Cellobiuronic Acid. W. F. Goebel, New York.—p. 353.

*Complement Fixation in Human Malaria with Antigen Prepared from Monkey Parasite Plasmodium Knowlesi. M. D. Eaton and L. T. Coggeshall, New York.—p. 379.

Antigenic Properties of Type Specific Substance Derived from Group A Hemolytic Streptococci. G. K. Hirst and Rebecca C. Lancefield, New York.—p. 425.

Organ Work and Organ Weight. Florence Walter and T. Addis, San Francisco.—p. 467.

Complement Fixation in Human Malaria.—Eaton and Coggeshall describe complement fixation studies the antigens for which were prepared from (1) normal monkey red cells, (2) parasitized red cells of monkeys dying with Plasmodium knowlesi infection and (3) the spleens of monkeys dying with Plasmodium knowlesi infection. The serums were obtained from (1) normal human beings, (2) patients with syphilis, (3) patients with dementia paralytica who were receiving malaria therapy and (4) patients with malaria alone. The malarial antigens gave negative complement fixation reactions with from 70 to 80 per cent of the syphilitic and normal serums and weak or doubtful reactions with the remaining 20 to 30 per cent. With the exception of one antigen prepared from spleen, there was no evidence that the malarial antigens were more reactive with Wassermann-positive than with Wassermann-negative serums. Some human serums gave weak complement fixation with antigens prepared from normal monkey erythrocytes and the percentage of these positive reactions was slightly higher with malarial serums than with normal or syphilitic serums. The most sensitive and specific malarial antigen was prepared from dried parasitized red cells by extraction with saline solution, freezing and thawing. This Plasmodium knowlesi antigen gave strong complement fixation with malarial serums from human beings infected with Plasmodium knowlesi, Plasmodium vivax or Plasmodium falciparum. The titer of complement fixing antibodies reaches a maximum about one month after the beginning of the acute infection. At this time all of the Plasmodium knowlesi serums tested were positive. After four months the reaction diminishes rapidly in titer but may remain positive for twelve months or longer. With Plasmodium knowlesi infections in man, the complement fixation reaction remains positive for some time after the infection has apparently disappeared as judged by daily smears and inoculation of monkeys with the blood. The complement fixation reaction in malaria is group specific rather than species specific. Serums from patients infected with Plasmodium vivax or Plasmodium falciparum reacted in the same way with the Plasmodium knowlesi antigen as the homologous serums. Absorption of malarial human serums with normal monkey erythrocytes does not remove the immune bodies which fix complement with malarial antigens.

Journal of Lab. and Clinical Medicine, St. Louis

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Specificity of Pneumococcus Types by Quellung and Agglutination Reactions. A. Noble and Bertha C. Cameron, Detroit.—p. 559.

*Observations on Use of Quinidine Sulfate in Children. C. R. Messeloff, New York.—p. 574.

Effect of Bananas on Laxation. P. L. Harris, Charleston, S. C., and G. L. Poland, New York.—p. 580.

Ragweed Hay Fever: Effect of Dosage in Treatment of 314 Cases. H. D. Dundy, L. Levin and H. Markow, Brooklyn.—p. 583.

*Effects of Tobacco Smoking on Health: Study of 2,031 Medical Records. J. J. Short, H. J. Johnson and H. A. Ley Jr., New York.—p. 586.

*Direct Comparison of Reactions of Human System to Tobacco Smoke and Adrenalin. J. J. Short and H. J. Johnson, New York.—p. 590.

Relation Between Skin Sensitivity, Liver Function, Leukopenic Index and Toxic Effects from Cinchophen. W. B. Rawls, B. J. Gruskin, A. A. Ressa and A. S. Gordon, New York.—p. 597.

Comparison of Intradermal Tests with Agglutinability and Certain In Vitro Tests of Streptococci, Staphylococci, Micrococcus Catarrhalis and Colon Bacilli Isolated from Persons Suspected of Having Chronic Infection. G. H. Chapman and C. Berens, New York.—p. 601.

Study of Calcium and Phosphorus in Cerebrospinal Fluid. D. J. Cohn, I. Kaplan and A. Levinson, Chicago.—p. 609.

Blood Picture in Brucellosis: Preliminary Report. Myrtle Munger and I. F. Huddleson, East Lansing, Mich.—p. 617.

Relationship Between Agglutinability and Certain In Vitro Tests of Staphylococci, Streptococci and Colon Bacilli Isolated from Persons Suspected of Having Chronic Infection. M. H. Stiles, Philadelphia, and G. H. Chapman, New York.—p. 620.

Sodium Dehydrocholate Solution as Solvent for Neoarsphenamine in Treatment of Syphilis. C. Shaw, Chicago.—p. 624.

Intradermal Test as Aid in Diagnosis of Enterobiasis. H. Tsuchiya and T. C. Bauerlein, St. Louis.—p. 627.

Determination of Hippuric Acid in Urine. T. E. Weichselbaum and J. G. Probstein, St. Louis.—p. 636.

Quantitative Determination of Urinary Estrogenic Hormone (Biologic Method): Consideration of Technic, Animal Colony and Laboratory Personnel. A. Palmer, San Francisco.—p. 643.

Demonstration of Bacteriostatic Action of Sulfanilamide on Hemolytic Streptococci in Vitro. E. Neter, Buffalo.—p. 650.

Effects of Quinidine Sulfate in Children.—Messeloff studied the effects of various doses of quinidine sulfate on ten children with regular sinus rhythm, one with frequent and persistent premature auricular contractions and one with bundle branch block associated with congenital heart disease. The impairment of auriculoventricular and intraventricular conduction as well as a decrease in the amplitude of the positive T wave, phenomena noted in adult studies, are also seen in children. The principles of dosage and of cumulation governing the clinical use of the drug in children appear to be identical with those reported in adults. Intraventricular conduction in the child with the bundle branch block was not unduly impaired by quinidine. Children tolerate large doses of quinidine, as judged by the age and weight standards. The usual adult daily dose of from 15 to 30 grains (1 to 2 Gm.) may be safely given to children. However, the large doses should be controlled by frequent electrocardiograms. The principles underlying dosage and cumulation of quinidine established for adults apply equally to children.

Effects of Tobacco Smoking on Health.—In an attempt to learn what, if any, symptoms are produced in comparatively healthy ambulatory persons by the use of tobacco, Short and his co-workers asked an unselected group of insurance policy holders to fill out a questionnaire, at the time of their periodic health examination, designed to elicit their practices with reference to the use of tobacco, but contained no reference to physical signs or symptoms. The latter information was obtained independently from the physical examination and medical history, which were recorded separately. Of 2,031 persons studied, 1,292

habitually used tobacco, 496 were nonusers, 104 used it only occasionally and 139 were former users who had discontinued the practice. Symptoms relating to the respiratory, circulatory, gastrointestinal and nervous systems were definitely increased among smokers. These increases ranged from 50 per cent for palpitation of the heart to 300 per cent for cough. The increased tendency to dyspnea on exertion in smokers gives point to the tabu on tobacco by many athletic directors, especially the trainers of pugilists. The relationship of tobacco smoking to gastric disturbances, especially hyperacidity, is a frequent clinical observation. For this reason sufferers from gastric or duodenal ulcers are usually asked to refrain from tobacco. In this study "heartburn" was increased by 100 per cent, and other digestive symptoms from 62 to 112 per cent. There was no significant variation between the smokers and nonsmokers in weight, pulse rate or blood pressure. Tremors appeared to be diminished in the smoking group. However, there was a tendency for tremors to be increased if habitual users were deprived of tobacco for a time; also blood pressures tended to vary considerably during the actual process of smoking. Seventy-eight of the 139 persons who gave up smoking did so for reasons of health.

Reactions to Tobacco Smoke and Epinephrine.—Short and Johnson made a direct comparison of the effects of epinephrine injection with those of tobacco smoking. Their observations, they state, confirm the view that the characteristic effects on pulse, blood pressure, peripheral cutaneous temperature and blood sugar of tobacco smoking can be explained by an increased output of epinephrine. This most probably is the result of a stimulating effect of nicotine on the sympathetico-adrenal system.

Journal of Neurophysiology, Springfield, Ill.

2: 101-172 (March) 1939

Course of Recovery of Spinal Cord from Asphyxia. A. van Harreveld and G. Marmont, Pasadena, Calif.—p. 101.
Cortical Response to Sensory Stimulation Under Deep Barbiturate Narcosis. A. Forbes and B. R. Morison, Boston.—p. 112.
Search for Changes in Direct Current Potentials of the Head During Sleep. H. Davis, P. A. Davis, A. L. Loomis, E. N. Harvey and G. Hobart.—p. 129.
Influence of Anoxia on Pupillary Reflexes in the Rabbit. B. Ury and E. Gellhorn, Chicago.—p. 136.
Factors Controlling Brain Potentials in the Cat. H. H. Dubner and R. W. Gerard, Chicago.—p. 142.
Control of Potential Rhythm of the Isolated Frog Brain. B. Libet and R. W. Gerard, Chicago.—p. 153.
Brain Wave Frequencies and Cellular Metabolism: Effects of Dinitrophenol. H. Hoagland, M. A. Rubin and D. E. Cameron, Worcester, Mass.—p. 170.

Journal of Urology, Baltimore

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Neuroblastoma of Adrenal Gland. S. Malisoff, New York.—p. 296.
Adrenal Heterotopia: Survey of Literature and Report of Case. O. S. Culp, Baltimore.—p. 303.
Etiology and Treatment of Renal Lithiasis. G. R. Livermore, Memphis, Tenn.—p. 310.
End Results in Renal and Ureteral Calculi. F. J. Parmenter, Buffalo.—p. 320.
Sacculated Aneurysm of Abdominal Aorta Operated for Perinephric Abscess. R. L. Davis, San Antonio, Texas.—p. 332.
Nephroptosis. G. W. Fish and C. T. Hazzard, New York.—p. 336.
*Transurethral Operations on Women for Relief of Dysfunction of Vesical Neck. G. J. Thompson, Rochester, Minn.—p. 349.
Surgical Removal of Vesical Calculus: Experimental and Clinical Study. F. P. Twinem, New York.—p. 360.
Clinical Study of Forty-Nine Cases of Urinary Calculi Requiring Surgery. C. H. deT. Shivers and K. P. Henderson, Atlantic City, N. J.—p. 366.
Hemorrhage into the Bladder in Polycythemia Vera: Report of Case. A. Kemble, Washington, D. C.—p. 397.
*Use of Vitamin C in Treatment of Essential Hematuria: Preliminary Report. C. E. Burkland, Baltimore.—p. 401.
Prostatic Hypertrophy as Part of Generalized Metabolic Disease: Evidence of Presence of Lipopenia. E. M. Boyd and N. E. Berry, Kingston, Ont.—p. 406.
Diagnostic Value of Residual Urine Estimation. T. J. Kirwin and G. A. Hawes, New York.—p. 413.

Transurethral Operations for Dysfunction of Vesical Neck.—Thompson performed thirty-five transurethral operations for dysfunction of the vesical neck among twenty-four women. The etiology of this disease is not definitely revealed by microscopic study of the tissue removed at operation. The hypothesis that it is caused by fibrosis in the sphincteric region seems fallacious in view of the fact that a considerable amount of fibrosis is found in normal tissue from this region. A possible explanation is that hyperplasia of the superficially lying epithelium or of the sphincter muscle occurs and causes urinary retention. The results of operation were excellent in fourteen cases, good in five, fair in four and poor in one. Removal of tissue from the entire circumference of the vesical neck is necessary to obtain a good result in all but exceptional cases in which only incision might suffice. The patient should be observed for a number of years following operation, and treatment including dilation with a Kollmann dilator will probably be necessary in some cases in order to maintain normal vesical function; the transurethral operation can be repeated with benefit if urinary obstruction recurs.

Vitamin C and Essential Hematuria.—Burkland used vitamin C in the treatment of four cases of essential hematuria. There was no evidence of scurvy or gross vitamin C deficiency in the four patients, except possibly in one who had colitis and diarrhea for some time. Yet the hematuria, which in each case had been present for several weeks, disappeared after the patients were given intravenous injections of vitamin C in the form of the sodium salt of ascorbic acid in sterile water. The dosages were arbitrarily chosen and therefore varied in patients from 100 to 300 mg. daily. A decrease in the hematuria occurred on the oral administration of vitamin C in the form of ascorbic acid tablets and fruit juices, but the intravenous administration was necessary to produce a more rapid, dramatic response. This was probably because on oral medication the absorption is delayed and is often faulty. It is the author's opinion that the vitamin C stopped the hematuria through its ability to cause alteration in capillary permeability, but, in addition, other actions reputed to it, such as increasing the coagulability of the blood, stimulating epinephrine secretion and acting as a catalyst for cellular metabolism, may have played some part in causing cessation of the hematuria. The effect may also be due to the fact that in the utilization of vitamin C by the body a large amount of it is excreted by the kidneys, leading to a high concentration in these organs. In view of the efficacy of the treatment, cases of essential hematuria might be considered as subclinical forms of vitamin C deficiency.

Kentucky Medical Journal, Bowling Green

37: 89-128 (March) 1939

The Problem of Chronic Disease. A. Bell, Hopkinsville.—p. 89.
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Immediate Repair of Perineal Lacerations. N. M. Garrett, Brodhead.—p. 102.
Lobar Pneumonia. N. Sugarman, Sneedville, Tenn.—p. 106.
Management of Obesity. G. Fulton and E. C. Humphrey, Louisville.—p. 110.
Headache. C. F. Long, Elizabethtown.—p. 116.
Postpartum Hemorrhage. S. H. Starr, Louisville.—p. 120.

Maine Medical Association Journal, Portland

30: 45-68 (March) 1939

The Doctor's Dilemma When and If the Government Goes into the Practice of Medicine in a Big Way. R. I. Lee, Boston.—p. 45.
Treatment of Genito-Urinary Infections with Sulfanilamide. G. A. Schneider and M. J. Harkins, Lewiston.—p. 52.
Two Unusual Foreign Body Cases. E. L. Pratt, Lewiston.—p. 54.

Minnesota Medicine, St. Paul

22: 145-216 (March) 1939

Significance of Normal Blood Sugar in Treatment of Diabetes Mellitus. J. R. Meade, St. Paul.—p. 145.
Acute Surgical Conditions of the Abdomen. J. M. Hayes, Minneapolis.—p. 147.
Torsion of the Omentum and Appendices Epiploicae: Report of Two Cases. B. F. Davis, Duluth.—p. 151.
Rating of Disabilities. M. O. Henry, Minneapolis.—p. 154.
Surgical Clinics of Europe: Some Personal Observations Made in 1937, 1938. L. Sperling, Minneapolis.—p. 157.
Indications for Cesarean Section. R. J. Moe, Duluth.—p. 163.
*Progesterone in Treatment of Habitual Abortion. S. B. Peters, Silver Creek, N. Y.—p. 166.
Human Hereditary Defects. E. J. Engberg, Faribault.—p. 169.
*Mumps Meningo-Encephalitis. T. L. Birnberg, St. Paul.—p. 173.

Progesterone for Habitual Abortion.—During the last year Peters has treated four cases of recurrent spontaneous abortion. The patients delivered normal living infants at term. As soon as the diagnosis of pregnancy was made and up to and

including the fifth month of pregnancy the patients received biweekly intramuscular injection of progesterone or corpus luteum extracts amounting to approximately 1 international unit. In all cases the blood Wassermann reactions were negative and nothing in the history, physical examination or laboratory data could be found to account for the abortions. No definite conclusions can be stated, but the author makes the suggestion that progesterone is a specific for a certain type of quite common recurrent abortion and premature labor, a view which is corroborated by experimental studies.

Mumps Meningo-Encephalitis.—During a period of five and a half years Birnberg has encountered thirty-eight cases of mumps meningo-encephalitis in private practice. So large an incidence, with no coincidental unusual mumps epidemic, leads him to consider mumps as a disease in which meningeal symptoms appear relatively often, and in the preadolescent age group it has been the most frequent complication that he has observed. The specific cause of mumps meningo-encephalitis would seem to be either the mumps virus or a toxin liberated by the virus. The clinical symptoms of mumps meningo-encephalitis may appear at from one to ten days after the onset of the parotitis. Occasionally the meningitis and parotitis develop simultaneously, as in one of the present cases. The neurologic symptoms in rare instances precede the parotitis by several days. There are some cases in which the meningo-encephalitis would appear to be of undoubted mumps origin by virtue of epidemiologic contact but in which a parotitis never occurs or is so slight as to pass unnoticed. The symptomatology, as observed in the thirty-eight cases, shows a fair degree of uniformity. The presenting symptom is almost invariably headache, often quite intense. Vomiting occurred in practically all cases but was usually not incessant and persisted for only one or two days. All patients had varying degrees of fever. Hiccup, lethargy or irritability were inconstant and usually not pronounced symptoms. Rarely dilated pupils may be an index of cerebral involvement. Convulsions and focal paralysis have been recorded but the author did not observe them in his cases. Neurologic examination almost always reveals rigidity of the neck and a positive Kernig sign. The diagnosis rests largely on the recognition that such a complication does occur. The relatively mild symptoms with a rather high cell count are a valuable diagnostic criterion. The treatment of mumps meningo-encephalitis is chiefly symptomatic. Spinal puncture should be performed as a diagnostic procedure; it is often of value in reducing fluid pressure, particularly in patients with persistent headache and vomiting. Mumps meningo-encephalitis persists for from three to eleven days. The temperature returns to normal and the subjective symptoms clear up two or three days before the neurologic signs become normal.

Missouri State Medical Assn. Journal, St. Louis

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The Third Stage of Labor, with Special Reference to Postpartum Hemorrhage, Placenta Accreta and Inversion of the Uterus. E. L. Dorsett, St. Louis.—p. 99.
Some Complications of Pregnancy and Labor in General Practice with Treatment. J. D. James, Springfield.—p. 102.
Office Management of Ambulatory Gynecologic Patients. R. R. Wilson, Kansas City.—p. 105.
Pyelitis of Pregnancy. C. E. Burford, St. Louis.—p. 108.
Vomiting of Pregnancy: Outline of Rational Therapy. C. R. Wegner, St. Louis.—p. 109.
Tuberculosis in Pregnancy. A. C. Henske, St. Louis.—p. 111.
Heart Disease and Pregnancy. J. Jensen, St. Louis.—p. 112.
Appendicitis in Pregnancy. D. Sauer and F. Bailey, St. Louis.—p. 113.
Pregnancy and Rectal Diseases. W. K. McIntyre, St. Louis.—p. 114.
Pregnancy and the Skin. C. W. Lane, St. Louis.—p. 115.
Relationship of Prenatal Nutrition to Fetal Tooth Development. A. O. Gruebbel, Jefferson City.—p. 117.
Rocky Mountain Spotted Fever: Report of Case. J. Zahorsky, St. Louis.—p. 118.
Nupercaine: Its Place in Urologic Practice. N. F. Ockerblad and H. E. Carlson, Kansas City.—p. 120.
Pyelitis Due to Bacillus Dysenteriae (Flexner), with Response to Sulfanilamide. A. C. Van Ravenswaay, Boonville.—p. 122.
Head Injuries and Their Mental Sequelae. E. T. Gibson, Kansas City.—p. 123.
Acute Retrocecal Appendicitis: Clinical Sign of Diagnostic Value. V. T. Williams, Kansas City.—p. 126.
Factors Influencing the Birth Rate and Maternal and Infant Mortality Rates in Missouri. J. W. Chapman, Jefferson City.—p. 127.

Nebraska State Medical Journal, Lincoln

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Diagnosis and Management of Peripheral Vascular Disease. G. de Takats, Chicago.—p. 81.
Prevention and Early Diagnosis of Rheumatic Heart Disease. C. J. Lundy, Chicago.—p. 83.
Gastroscopy in Diagnosis of Diseases of the Stomach. R. R. Best and A. M. Popma, Omaha.—p. 86.
Acute Appendicitis with Perforation. J. Weinberg, Omaha.—p. 89.
Newer Developments in Child Nutrition. P. C. Jeans, Iowa City.—p. 92.
Anorexia. A. G. Dow, Omaha.—p. 96.
Nutrition as Affected by the Economic Level. G. E. Robertson, Omaha.—p. 98.
Treatment of the "Refractory" Anemias. J. C. Sharpe and S. G. Rathburn, Omaha.—p. 103.
Hysteria: Exposition of the Theory of T. A. Ross. R. F. Richie, Lincoln.—p. 107.

New England Journal of Medicine, Boston

220: 269-314 (Feb. 16) 1939

Experimental Studies Concerning the Nature of Hypertension: Their Bearing on Surgical Treatment. S. J. G. Nowak and I. J. Walker, Boston.—p. 269.
Pelvic Sympathetic Surgery for Relief of Bladder Pain: Resection of Superior Hypogastric Plexus and Lateral Sacral Sympathetic Ganglions in Tuberculous Cystitis. C. F. Schroeder, Detroit.—p. 274.
Various Methods of Determining the Early Diagnosis of Arteriosclerosis in Diabetes. L. I. Kramer, Providence, R. I.—p. 278.
*Alcohol Tolerance Tests in Normal Individuals and in Patients with Diabetes Mellitus and Diabetes Insipidus: Effect of Pituitrin, Insulin, Food and Forced Water on Blood and Urine Alcohol Levels After the Ingestion of Alcohol. H. Blotner, Boston.—p. 283.
Abdominal Surgery. A. W. Allen, Boston.—p. 290.

Alcohol Tolerance Tests in Normal and Diabetic Persons.—Blotner discusses the results of some alcohol tolerance tests that he performed on normal persons and on patients with diabetes insipidus and diabetes mellitus following the ingestion of 0.6 cc. of absolute alcohol per kilogram of body weight. He also studied the effect of insulin, solution of posterior pituitary, food and forced water intake on these tests. Symptoms of alcoholic intoxication appeared in these people when the alcohol concentration of the blood and the urine were below 63 mg. per hundred cubic centimeters, in comparison to the much higher levels reported by others. Alcohol curves of the blood and the urine after a test meal were slightly higher in patients with diabetes insipidus than in normal persons. Solution of posterior pituitary reduced the alcohol levels of the blood and the urine in both these groups; nevertheless it increased considerably the symptoms of alcoholic intoxication in the former. In the patients with diabetes mellitus the alcohol levels of the blood and the urine were appreciably higher than normal, although the symptoms of alcoholic intoxication were much the same. The administration of insulin had no effect on the alcohol curves or on the symptoms of alcoholic intoxication. An alcoholic odor on the breath may cause confusion in the diagnosis of coma due to insulin or acidosis. The ingestion of food before the ingestion of alcohol produced a striking decrease in the alcohol levels of the blood and urine and in the symptoms of alcoholic intoxication in diabetic patients. The diuresis resulting from forced water intake and uncontrolled diabetes insipidus did not dilute the concentration of alcohol in the urine but increased the total amount of alcohol excreted in it. Nevertheless, forcing water in the case of an alcoholic patient would not produce any appreciable results in therapy, because the total alcohol eliminated by this method is small compared to the amount ingested.

220: 315-364 (Feb. 23) 1939

Experiences with Gastrectomy, Total and Subtotal. F. H. Lahey, Boston.—p. 315.
David Williams Cheever. F. B. Lund, Boston.—p. 321.
Surgical Diseases of the Extrahepatic Bile Ducts. I. S. Ravdin, Philadelphia.—p. 326.
Use of Vinyl Ether (Vinethene) in Infancy and Childhood: Report of 100 Cases. R. E. Gross, Boston.—p. 334.
*Use of Specific Serums in Treatment of Pneumonias Associated with Pneumococci of the "Higher" Types. M. Finland, Boston.—p. 336.
Gastro-Enterology. C. M. Jones, Boston.—p. 339.

Serums for Pneumonias of "Higher" Types.—Finland believes that type V, VII and VIII pneumonia is sufficiently prevalent to make it possible to accumulate significant numbers of cases within a reasonable time to indicate the efficacy of any therapy. Pneumonias due to the "higher" types may be quite atypical in their symptomatology and in the character of the

pulmonary lesions produced. This is in sharp contrast to types I and II, which except in rare cases are associated with typical lobar pneumonias. Thus a small percentage of cases of type V pneumonia are atypical, but among those due to types VII and VIII, particularly the latter, the disease may be atypical in a considerable proportion of cases. The experience of all observers who have treated any appreciable number of cases of type V pneumonia with serums has been uniformly favorable. In most clinics, including the Boston City Hospital, the results as judged by the reduction in mortality and the occurrence of rapid clinical improvement have been comparable to those obtained in type I cases or even better. Experiences with type VII and VIII cases, on the other hand, have varied widely; most of them have been favorable, and the mortality in specifically treated cases has been lower than that of non-serum treated cases. One may also include type XIV pneumonia in infants and young children among those which have given favorable results in clinics in which serum has been used extensively. There are many fundamental reasons underlying the differences in result, and these are in no way different from the circumstances previously encountered in type I and II cases. Therefore every effort should be made to acquire the necessary basic information with regard to the frequency of the various types in pneumonia, the bacteremic incidence, the death rates among the various types of pneumonia and the occurrence of the same types of pneumococci in the respiratory tract under other conditions. In acutely sick patients with good sputum raised from the bronchi, particularly if it is rusty, the discovery of a given type as the only or definitely predominating organism is adequate indication for specific serum, and its proper employment will probably increase the chances of rapid recovery. Further experience may reveal that certain of the types are more regularly and intimately related to pneumonia than are others. Already it appears that a greater proportion of types IV, XII and XVIII pneumococci, for example, are causative agents in pneumonia than are those of types VI, X, XX and types "higher" than XX. This is only relatively true, however, since probably every type may cause severe and even fatal pneumonia under the proper circumstances or in a particular individual.

New York State Journal of Medicine, New York

39: 401-488 (March 1) 1939

Topical Application of Vitamin A: Efficiency Judged by Growth Stimulation. W. H. Eddy and Joan L. Howell, New York.—p. 406.
Afterpains. S. B. Blakely, Binghamton.—p. 411.
Clinical Experiences with Sulfanilamide Therapy, with Special Reference to Toxic Effects. R. Ottenberg, New York.—p. 418.
General Paresis: Biologic and Serologic Variants Affecting Results of Treatment. B. Pollack, Rochester.—p. 431.
Carcinoma of Rectum and Colon: Early Diagnosis and Treatment. F. C. Yeomans, New York.—p. 439.
*Chancroid: Comparative Study of Ito Test Made with Three Vaccines. H. C. Saunders, O. Canizares and R. F. Reider, New York.—p. 447.
Therapeutic Use of Bacteriophages, Particularly in Sepsis. W. J. MacNeal, New York.—p. 451.

Ito Test for Chancroid.—Saunders and his associates believe that the Ito test, performed with vaccines of Ducrey streptobacilli, is specially valuable in the diagnosis of long-standing chancroids. In the majority of these phagedenic lesions, in which autoinoculations are usually negative, the Ito test is always positive. The negative autoinoculations in these cases are probably due to the overgrowth of the Ducrey streptobacillus by common pyogenic bacteria. They substantiate the opinions of other observers that the Ducrey vaccine is satisfactory as a diagnostic test in the majority of cases. In a comparison of Greenblatt's vaccine with dmelcos, 180 tests were performed on eighty-six individuals. The tests were positive in forty-four cases and negative to both vaccines in forty-six cases. In twenty-six of the positive cases the two vaccines gave equal reactions. Greenblatt's vaccine gave stronger reactions than dmelcos in four cases and weaker reactions in sixteen cases. A comparison of an American commercial vaccine with dmelcos (sixty-two tests on twenty-seven persons) gave nineteen negative and twelve positive reactions with both vaccines. In five of the positive cases the two vaccines gave equal reactions. The commercial vaccine was stronger in one case and weaker in six cases. In comparing the three vaccines, 360 tests were performed on 112 persons; seventy-six gave negative reactions to all vaccines, forty-four gave positive reactions, of which twenty-six were of equal intensity, and eight gave the strongest reaction with dmelcos, four with Greenblatt's and four with the commercial vaccine. When the reaction to dmelcos vaccine was negative, the other two vaccines also gave negative reactions. The differences in the positive reactions were slight and in no case of such a degree as to be of any practical value. Therefore the specificity of the two American Ducrey vaccines for the diagnosis of chancroidal infections is confirmed.

Psychoanalytic Quarterly, Albany, N. Y.

8: 1-138 (Jan.) 1939

Notes on Identification in Case of Depression Reactive to Death of Love Object. M. W. Peck, Boston.—p. 1.
Character and Symptom Formation: Some Preliminary Notes with Special Reference to Patients with Hypertensive, Rheumatic and Coronary Disease. F. Dunbar, New York.—p. 18.
Observations on World Destruction Fantasies. W. J. Spring.—p. 48.
Problems of Psychoanalytic Technic. O. Fenichel, Los Angeles.—p. 57.
Schopenhauer and Freud: Comparison. W. Bischler, Geneva, Switzerland.—p. 88.
Contributions of Psychoanalysis to Education of the Adolescent. Caroline B. Zachry, New York.—p. 98.

Public Health Reports, Washington, D. C.

54: 287-334 (Feb. 24) 1939

Studies of the Acute Diarrheal Diseases: I. Differential Culture Mediums. A. V. Hardy, J. Watt, T. M. De Capito and M. H. Kolodny.—p. 287.
Clegg's Ameba Culture Method for Growing Mycobacterium Leprae. Florence L. Evans.—p. 301.
*Glucose Tolerance in Rheumatic Fever. M. P. Schultz.—p. 305.

54: 335-372 (March 3) 1939

Preventive Clinic Facilities Available in Ninety-Four Selected Counties of the United States. A. J. Borowski and Margaret Lovell Plumley.—p. 335.
Catalytic Potency of Blood in Rheumatic Fever. M. P. Schultz and Edythe J. Rose.—p. 343.
Study of Quartz-Fusing Operations, with Special Reference to Measurement and Control of Silica Fumes. E. C. Riley and J. M. DallaValle.—p. 352.

Dextrose Tolerance in Rheumatic Fever.—Schultz obtained curves indicating the degree of dextrose tolerance in ten patients with rheumatic fever and fourteen with various febrile diseases. In none of the patients is it apparent that the patient with rheumatic fever, in comparison with those suffering from other febrile diseases, possessed an increased degree of dextrose tolerance. However, in comparison four rheumatic patients showed a relatively decreased dextrose tolerance. This may perhaps be accounted for by the occurrence of slightly higher temperatures in the rheumatic fever patients in some instances. In both groups temperatures had been closely comparable during preceding days and, with the exception of one comparison, the erythrocyte sedimentation rates agreed closely. On the basis of dextrose tolerance tests the author states that no association between rheumatic fever and hyperinsulinism is demonstrable.

Rhode Island Medical Journal, Providence

22: 39-56 (March) 1939

Relation of Household Dusts to Asthma in Childhood. W. P. Buffum and S. S. Freedman, Providence.—p. 42.

Rocky Mountain Medical Journal, Denver

36: 145-216 (March) 1939

*Common Animal Parasites Transmissible to Man. E. R. Mugrage, Denver.—p. 162.
Newer Methods of Treatment in Psychiatry. C. H. Barnacle, Denver.—p. 164.
Brain Tumors with Focal Symptoms. L. E. Daniels, Denver.—p. 168.
Surgical Problems of the Gallbladder and Bile Ducts. A. S. Jackson, Madison, Wis.—p. 171.
Heart Disease in Colorado. E. Durbin, Denver.—p. 173.

Common Animal Parasites Transmissible to Man.—Endamoeba histolytica, Trichomonas hominis, Ascaris lumbricoides and Enterobius vermicularis, according to Mugrage, are endemic in the vicinity of Colorado and he believes that more frequent stool examinations in the laboratory would undoubtedly disclose other parasites. Animal parasites seldom seen now may be encountered in the future owing to the increasing use of rapid transportation, the airplane particularly. Any person coming from a country in which animal parasites are prevalent is potentially a carrier. Animals or birds brought in, or even the airplane, automobile, ship or baggage can also

act in a similar way. With rapid transportation the incubation period for development of the parasite may extend beyond the time of arrival of the host at his destination, with subsequent development of symptoms not diagnosed unless this possibility is considered. A few cases of malaria have been seen at Colorado General Hospital with symptoms developing after the person's return to Colorado from the South. The United States Public Health Service considers this possibility a definite problem, and its personnel inspects both passengers and airplanes on all commercial airlines coming into this country. The Army and Navy medical corps also consider animal parasites of major importance in their problems on health and sanitation and their medical schools stress this subject. Other governmental departments are also active on this public health problem of parasite control, which the medical profession in general practice has largely slighted.

South Carolina Medical Assn. Journal, Greenville

35: 57-82 (March) 1939

Present Status of Prostatic Surgery. L. P. Thackston, Orangeburg.—p. 57.
Dr. John Moultrie of Charles Town. P. Rucker, Richmond, Va.—p. 60.
Congenital Vomiting—Causes and Treatment. W. Weston Jr., Columbia.—p. 62.

Southern Medical Journal, Birmingham, Ala.

32: 233-340 (March) 1939. Partial Index

Treatment of Carcinoma of the Cervix Uteri: Tissue Changes During and Following Radiation Therapy. J. C. King and W. W. Brandes, Memphis, Tenn.—p. 233.
Improved X-Ray Technic in Studying Knee Joints. E. C. Holmblad, Chicago.—p. 240.
Tuberculosis and Tuberculids. H. S. Alden and J. W. Jones, Atlanta, Ga.—p. 256.
Exercise Tolerance Test (Master and Oppenheimer) in Estimation of the Capacity of the Diseased Heart. B. R. Heninger, New Orleans.—p. 262.
Thermophore Treatment of Retinal Detachment. L. T. Post, St. Louis.—p. 273.
Conservative Management of Sinuses. J. W. Jervey Jr., Greenville, S. C.—p. 278.
Surgical Aspects of Chronic Sinusitis. W. R. McKenzie, Baltimore.—p. 283.
Lye Poisoning and Stricture of the Esophagus: Report of Fifty Cases. J. M. Martin and J. M. Arena, Durham, N. C.—p. 286.
Lobar Pneumonia. D. R. Sacks and L. Rice, San Antonio, Texas.—p. 294.
*Mode of Action of Sodium Sulfocyanate in Reducing Hypertension: Report of Its Effect on the Erythrocytes. H. M. Doles, Norfolk, Va.—p. 299.
Cancer, Trauma and Compensation. E. L. Bishop, Atlanta, Ga.—p. 302.
Clinical Correlates of Functional Uterine Bleeding. E. C. Hamblen, Durham, N. C.—p. 308.
Hemorrhage in Pregnancy, with Brief Analyses of Cases of Hemorrhage During the Last Ten Years at the University and St. Anthony Hospitals in Oklahoma City. W. W. Wells, Oklahoma City.—p. 319.
Syphilis and Life Insurance. T. W. Murrell and R. C. Manson, Richmond, Va.—p. 322.
*Treatment of Dermatoses of Intestinal Origin with Castor Oil and Sodium Ricinoleate. A. G. Schoch, Dallas, Texas.—p. 326.
Premonitory Pain in Coronary Artery Occlusion. W. Langston, Oklahoma City.—p. 333.

Action of Sodium Thiocyanate on Hypertension.—Doles studied the value of the thiocyanates by giving ten patients with hypertension and macrocytosis a general diet with an intake of 30 mg. of iron daily through food and water. After the fifth day the output of iron in twenty-four hours was estimated in the stools and urine for four days. The average daily output was from 14.5 to 16 mg. The patients were then given a diet in which the maximal intake of iron in twenty-four hours did not exceed 7.5 mg. and after the fifth day quantitative determinations were made for five consecutive days. Only a faint trace of iron could be found in the stools and none in the urine. The same procedure was carried out with this diet being continued and the patient was given 3 drachms (12 Gm.) of sodium thiocyanate twice a day. From 12.5 to 24.5 mg. of iron, depending on the patient, was recovered in the stools and urine every twenty-four hours. As long as the patient showed a relatively high output of iron in the stools and urine there was a fall in the volume of packed cells with a corresponding fall in the blood pressure. However, four patients did not give up their iron readily; and it was many months before the macrocytosis or blood pressure responded. Contraindications to the use of thiocyanates are hypertension in which the cells are normocytic, normochromic, normocytic hypochromic, microcytic normochromic or microcytic hypochromic, or in macrocytic hypertensions which show an increase in the icterus index of 7 units or more without evidence of hepatic disease.

Castor Oil for Dermatoses of Intestinal Origin.—Schoch treated ten patients who had dermatoses presumably of intestinal origin with castor oil by mouth or a castor oil derivative (sodium ricinoleate and kaolin emulsion). In nine there was clinical evidence that prompt benefit resulted from the administration of castor oil or its derivative. Not the slightest benefit resulted from the administration of the castor oil in the remaining patient, even though the dermatosis was definitely intestinal in origin. Castor oil is probably more thorough in its cathartic action than the usually prescribed saline laxatives. The favorable influence that sodium ricinoleate apparently exerts in some cases is not clearly understood.

Surgery, Gynecology and Obstetrics, Chicago

68: 595-722 (March) 1939

*Multiple Primary Malignant Lesions. L. K. Stalker, R. B. Phillips and J. deJ. Pemberton, Rochester, Minn.—p. 595.
*Fate of Living and Dead Cartilage Transplanted in Humans. L. A. Peer, Newark, N. J.—p. 603.
Modern Surgical Treatment of Ureterocele. R. Gutierrez, New York.—p. 611.
Aseptic Necrosis of Bone: II. Infarction of Bones of Undetermined Etiology Resulting in Encapsulated and Calcified Areas in Diaphyses and in Arthritis Deformans. S. C. Kahlstrom, Bath, N. Y.; C. C. Burton, Dayton, Ohio, and D. B. Phemister, Chicago.—p. 631.
Diagonal Conjugate versus X-Ray Pelvimetry. A. L. Dippel, Baltimore.—p. 642.
Pauwels' Reclination, Physiologic Reconstruction for Nonunited Fracture of Neck of Femur. G. J. Karfiol, San Francisco.—p. 648.
Technic of Mammaplasty in Conditions of Hypertrophy of the Breast. H. Gillies and A. H. McIndoe, London, England.—p. 658.
Accessory Renal Vessels: Their Influence in Certain Cases of Hydronephrosis. H. J. Jewett, Baltimore.—p. 666.
Intracranial Solitary Chondroma. J. Chorobski, J. Jarzymski and E. Ferens, Warsaw, Poland.—p. 677.
Acute Putrid Abscess of the Lung: III. Roentgenographic Features. A. S. W. Touroff and H. Neuhof, New York.—p. 687.
Operative Management of Fibromyomas in the Uterus at Term. C. P. Huber, Indianapolis, and H. C. Hesseltine, Chicago.—p. 699.
Jejunoplasty for Obstruction Following Gastro-Enterostomy or Subtotal Gastric Resection. C. L. Hoag and J. B. deC. M. Saunders, San Francisco.—p. 703.
Fractures of Neck of Femur Treated with Smith-Petersen Nail: Analysis of Seventy-Eight Cases During 1937. S. M. Leydig, St. Louis.—p. 713.

Multiple Primary Malignant Lesions.—From a review of the literature of the last twenty years, Stalker and his colleagues find that multiple primary malignant lesions occur more frequently than is generally suspected. They made a study of 2,500 cases of malignant lesions in which operation was performed at the Mayo Clinic during 1937. They found 113 instances of multiple primary neoplasms in this group of cases. In these cases there were 327 separate neoplasms; 167 involved the skin and lip, forty-seven of the neoplasms were situated in the gastrointestinal tract, forty-three in the mammary gland, twenty-seven in the ovaries and fourteen in the uterus or cervix, and twenty-nine were situated in various other parts of the body.

Fate of Living and Dead Cartilage.—Desiring to obtain more definite information concerning the fate of human cartilage grafts in human tissues, Peer performed the following experiments: 1. Six segments of cadaver cartilage preserved in alcohol were transplanted beneath the skin of six other human beings and removed for examination at intervals of from six months to two years. 2. Eight segments of living autogenous costal cartilage were buried beneath the skin of eight human beings and removed for examination at intervals of from six months to six years. All these grafts were transplanted without perichondrium. Dead cartilage grafts buried from nine and one-half months to two years showed progressive invasion by fibrous tissue and partial absorption. In contrast to this, autogenous rib cartilage grafts showed no invasion or absorption over the same period. Two late autogenous rib cartilage grafts buried for four and one half and six years, respectively, appeared as living cartilage. From the evidence found in these sections one may conclude that autogenous rib cartilage survives after transplantation as living cartilage and, up to periods as long as six years, neither increases nor decreases in size. Therefore autogenous rib cartilage is better material for plastic repair than dead, pickled cartilage.

Tennessee State Medical Assn. Journal, Nashville

32: 39-76 (Feb.) 1939

Sulfanilamide: Review. E. H. Barksdale, Nashville.—p. 39.
Medical Management of Chronic Gallbladder Disease. L. C. Sanders, Memphis.—p. 47.
Intravenous Use of Morphine Sulfate in Treatment. B. R. Powers, Knoxville.—p. 50.

Virginia Medical Monthly, Richmond

66: 129-190 (March) 1939

Early Diagnosis in Pneumonia. W. P. Adams, Norfolk.—p. 129.
Diagnosis and Treatment of Lobar Pneumonia. D. G. Chapman, Richmond.—p. 132.
Type III Pneumococcus Pneumonia: Report of Case Successfully Treated with Specific Serum. J. P. Kent, Altavista.—p. 136.
Prevention of the Common Cold. J. R. Hamilton, Nassawadox.—p. 139.
Bang's Disease. I. D. Wilson, Blacksburg.—p. 142.
Roentgen Ray Examination of the Colon. W. P. Gilmer, Clifton Forge.—p. 143.
Otogenic Acute Suppurative Arthritis. F. H. McGovern, Danville.—p. 146.
*Acute Arsenic Poisoning. W. A. Porter, Hillsville.—p. 148.
Snares and Pitfalls in Medicine as Shown in Review of Three Cases: Brilliant Results and Cures by Modern Medicine in Two Cases. W. E. Driver, Norfolk.—p. 151.
Care and Feeding of the Newborn and the Premature from the Pediatric Point of View. J. B. Stone, Richmond.—p. 158.
Myxedema. K. D. Graves, Roanoke.—p. 162.
Value of the Periodic Health Examination. R. F. Simms, Richmond.—p. 164.
Responsibility of the General Practitioner in Prevention of Mortality in Acute Abdominal Conditions. H. W. Smeltzer, Abingdon.—p. 169.
Significance and Management of Ankle Edema. W. C. Reed, Richmond.—p. 171.
Fish-Bone Perforating the Cecum Simulating Acute Appendicitis. W. Fry, Washington, D. C.—p. 173.

Acute Arsenic Poisoning.—Besides the usual treatment of arsenic poisoning Porter used 800 international units of vitamin B_1 daily. The salient feature in the patients receiving the vitamin was the absence of diarrhea. It is his belief that the use of vitamin B_1 has a definite place in the treatment of toxic neuritis from metal poisoning. Prompt improvement of neuritic pains occurred after the vitamin B_1 had been administered for only a few days.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

47: 55-106 (Feb.) 1939

*Recurrent Hyperthyroidism: Likelihood of Recurrence in Relation to Preoperative Blood Iodine Level. R. B. Cattell and H. J. Perkin, Boston.—p. 55.
Medical Aspects of Treatment of Toxic Goiter. J. H. Means, Boston.—p. 62.
Microhistometric Method Applied to Thyrotropic Hormone Assay. P. Starr, R. W. Rawson, R. E. Smalley, E. Doty and Helen Patton, Chicago.—p. 65.
Hyperinsulinism Due to Tumor of the Pancreas: Case Report. R. D. Forbes, C. F. Davidson and J. Duncan, Seattle.—p. 76.
Varicose Veins in Pregnancy. A. M. McCausland, Los Angeles.—p. 81.
Chronic Duodenal Obstruction: Two Case Reports. B. P. Mullen, Seattle.—p. 85.
Tuberculous Subphrenic Abscess and Empyema with Perforation of Diaphragm: Report of One Case. H. N. Roback and J. N. Alley, Medical Lake, Wash.—p. 88.
Fused Placentas Simulating Single Placenta. C. L. Wilson and A. C. Webb, Chicago.—p. 91.
Surgical Approach to Hypertension: Division IV. F. M. Findlay, San Diego, Calif.—p. 94.

Recurrent Hyperthyroidism.—Cattell and Perkin relate the data of patients with recurrent or persistent hyperthyroidism observed at the Lahey Clinic in the last decade. They present evidence which suggests that the level of iodine in the blood in hyperthyroidism may be used as an index for determining the amount of thyroid tissue to be removed. Persistent hyperthyroidism results from not removing enough of the gland. Recurrent hyperthyroidism is a return of the primary disease at some time following operation, after an interval of complete relief from toxic symptoms. The causes of recurrent hyperthyroidism are as obscure as are the factors responsible for the original disease. From 1928 to 1937 inclusive subtotal thyroidectomy in one or more stages was performed on 4,956 patients. Of these patients 119 were later operated on for persistent hyperthyroidism and 187 for the recurrent type. The average time interval between the initial and second operation for persistent hyperthyroidism was two years and four months; for recurrent hyperthyroidism it was seven years and eleven months. The authors believe that following the initial thyroid operation recurrent hyperthyroidism can be often prevented if the patient is watched carefully. Their patients are advised to refrain from work for from six to twelve weeks. Daily periods of rest, avoidance of stimulants and excitement are necessary. Careful follow-up examinations including a basal metabolism test are done every three months for one year and every year for five years. At these examinations minor complaints are treated and general means are employed for rehabilitation. Follow-up study has led the authors to conclude that the use of iodine following subtotal thyroidectomy for hyperthyroidism did not reduce the incidence of recurrent or persistent hyperthyroidism. A study of the preoperative and postoperative blood iodine levels in 256 cases of exophthalmic goiter has given them a means of predicting cases in which recurrence is likely to happen. This prediction can be made prior to the initial thyroid resection and accordingly is a guide in selecting those patients who should have the more radical thyroidectomy. A correlation exists between the blood iodine level and the duration of symptoms in patients with exophthalmic goiter. The blood iodine level tends to be elevated in cases with symptoms of hyperthyroidism for nine months or less. After symptoms have been present for one year or longer the blood iodine level is generally found to be within normal limits. A further insight into the iodine metabolism in exophthalmic goiter has been gained by estimating the concentration of iodine in the blood at intervals following operation. Of 256 cases studied, 100 were followed for one year. The blood iodine results in these patients show that each case can be classified into one of three groups. Group 1 consists of 170 patients with hyperthyroidism who had an elevated blood iodine before treatment was commenced. Following subtotal thyroidectomy the blood iodine was found to remain normal throughout the year during which they were followed. Fifteen patients showed transitory postoperative myxedema, while only one had recurrent hyperthyroidism. Group 2 consists of sixty-one patients with hyperthyroidism who had a normal preoperative blood iodine level and following subtotal thyroidectomy were found to have an increase in the concentration of iodine in the blood. The greatest elevation of blood iodine usually occurred six months after operation. After one year the level of iodine in the blood returned to normal. Two patients of this group had transitory hypothyroidism, while twelve had recurrent hyperthyroidism. Group 3 consists of twenty-five patients in whom the blood iodine level was normal preoperatively and was found to remain normal during the year following subtotal thyroidectomy. Only one patient had transitory postoperative myxedema. Therefore it appears that in order to decrease the rate of recurrence in group 2 it becomes necessary to do a more radical subtotal thyroidectomy in all patients having a normal blood iodine level preoperatively.

West Virginia Medical Journal, Charleston

35: 105-152 (March) 1939

Pathogenesis of Low Back Pain. E. L. Compere, Chicago.—p. 105.
Control of Tuberculosis in West Virginia. G. E. Gwinn, Beckley.—p. 116.
Prevention and Modification of Measles. F. J. Holroyd, Princeton.—p. 121.
Sulfanilamide Treatment of Undulant Fever. L. B. Hart, Beckley.—p. 126.
Gout: An Ancient Wolf in Modern Sheep's Clothing. J. L. Wade, Parkersburg.—p. 128.
Sulfanilamide in Treatment of Gonorrhea in the Female. A. P. Hudgins, Charleston.—p. 137.

35: 153-200 (April) 1939

Nephropexy. G. F. McKim, Cincinnati.—p. 153.
Hernia in Infancy. C. T. Thompson, Morgantown.—p. 158.
Effect of Pulmonary Emphysema on the Heart. H. M. Korns, Iowa City.—p. 160.
Maternal and Child Health Services Under the Social Security Act. Clara E. Hayes, Washington, D. C.—p. 164.
Foregut—Triumphant Entry to Conflict. N. B. Hendrix, Martinsburg.—p. 169.
Reflections on the Diagnosis and Treatment of Coronary Occlusion. I. I. Hirschman and L. B. Gang, Huntington.—p. 179.
Staphylococcic Septicemia: Case Report. J. F. Morris, Huntington.—p. 186.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

51: 51-108 (Feb.) 1939

*Pellagra in Great Britain Since 1934. J. H. T. Davies and H. G. McGregor.—p. 51.
Phytopharmacologic Index in Pemphigus: Note. F. W. Sansome and L. Forman.—p. 63.
Further Experimental Studies of Pemphigus. L. Fleck and F. Goldschlag.—p. 70.

Pellagra in Great Britain.—Davies and McGregor present a summary of the twelve cases reported as pellagra in Britain since 1934 and add four new cases seen by them. They believe that there is sufficient evidence to show that vitamin B_2 deficiency alone is not sufficient explanation for the occurrence of pellagra. Murray calls attention to the facts that maize is not inferior to rice or wheat in vitamin B_2 content, yet a rice diet rarely gives rise to pellagra, while a diet of maize often does, and that the consumption of yellow maize, in distinction to white, does not predispose to the disease. Again, many cases have been reported in which the diet previous to the onset of the disease was reasonably full and varied; the preponderance of the disease in the female sex also points to some additional factor besides vitamin deficiency. The former point is made much of by the exponents of the infective theory. The latter suggests the possible influence of the endocrines. Further, although Goldberger has shown that rat pellagra is purely a vitamin B_2 deficiency disease, variable only in relation to this deficiency, human pellagra shows an additional variation—a seasonal one. Sabry postulates a mother substance, or pellagratoxin, which is acted on by a ferment in the presence of sunlight to produce melanin. The mother substance is phenylalanine; he has identified the ferment as dopa-oxidase, which is present in maize and some other foods. Sabry injects thiosulfate, which, it is claimed, neutralizes the pellagratoxin. The exact part played by light, however, in producing the eruption is by no means clear. Crutchfield regards trauma of various kinds more important than any specific photodynamic action of the sun. Other substances besides vitamin B_2 are now known to have antipellagra properties. Chief among these is nicotinic acid. Though neither the maximal nor the minimal dose has been ascertained, the factor may well be administered in daily doses of 50 mg. Finally, there remains for discussion the possibility of an association between pellagra and Addison's disease. The connection has been proposed because of the frequent occurrence in pellagrins of symptoms suggestive of Addison's disease: hypotension, pigmentation, subnormal temperature, weakness and gastrointestinal upsets. According to Simpson, the situation may be epitomized as follows: 1. Vitamin deficiency might cause both pellagra and adrenal insufficiency in the same patient. 2. Adrenal insufficiency might occur in the course of pellagra as a sequel to malnutrition. 3. Pellagra might occur in the course of chronic Addison's disease as a sequel to the associated anorexia. In the present state of knowledge it would seem that no definite ruling can be given on the question of a direct etiologic association between the two conditions.

Edinburgh Medical Journal

46: 61-152 (Feb.) 1939

*The Expectancy of Life After Ureteral Transplantation. H. Wade.—p. 61.
Field of Vision and Anatomy of the Visual Nerve Path. H. M. Traquair.—p. 83.
Tumors of the Lung, Mediastinum and Pleura. M. C. Tod.—p. 95.
Observations on the Virus of Influenza, with a View to Elaborating a Simple Diagnostic Test Whereby Its Presence in the Respiratory Tract of Man May Be Revealed. W. J. Tulloch.—p. 117.

Life Expectancy After Ureteral Transplantation.—Wade states that, in order to determine the expectancy of life after ureteral transplantation and to assess accurately how far, if at all, this has been shortened by the establishment of a cloaca, it is necessary to select patients in sound general health and free of disease, but in whom the urinary bladder was irreparably damaged by developmental error or accident. In this category are included certain cases of complete vesical exstrophy, subsymphysial exstrophy and vesicovaginal fistula with destruction of the vesical sphincter from obstetric injuries or similar cause. Cases are now available in which a sufficient period has elapsed since ureteral transplantation to enable one to estimate accurately the influence of this operation on the general health of the patient and the expectancy of life. In this connection the author cites four cases in which the ureters were transplanted into the pelvic colon for the congenital malformation of vesical exstrophy. They demonstrate conclusively to him that when ureteral transplantation has been successfully performed the patient is given not only comfort, happiness and good health but also the prospect of a natural length of life. His patients were operated on thirty, twenty-eight, twelve and eleven years ago, respectively. This shows that only in those persons in whom a congenital deformity or traumatic injury is being corrected ureteral transplantation is a relatively safe procedure and fully warranted in these distressing disabilities.

Journal of Hygiene, London

39: 1-90 (Jan.) 1939

Streptolysins of Various Groups and Types of Hemolytic Streptococci: A Serologic Investigation. E. W. Todd.—p. 1.
Ventilation of Houses After Fumigation with Hydrogen Cyanide. A. B. P. Page, O. F. Lubatti and F. P. Gloyns.—p. 12.
Investigation on Seasonal Fluctuation of Vitamin C Excretion in Palestine. K. Guggenheim.—p. 35.
Note on the Percentage Loss of Calories as Waste on Ordinary Mixed Diets. E. P. Cathcart and A. M. T. Murray.—p. 45.
*Milk Epidemic of Scarlet Fever and Angina, Originating from a Milkmaid with Scarlatinal Otitis Media. E. J. Henningsen and J. Ernst.—p. 51.
Influence of Air Movement and Atmospheric Conditions on Heat Loss from a Cylindrical Moist Body. A. J. Canny and C. J. Martin.—p. 60.

Milk Epidemic of Scarlet Fever.—Henningsen and Ernst report a milk epidemic of scarlatinal angina. There were 118 cases of scarlet fever and about fifty cases of sore throat. The infection was spread through contamination of the milk from a milkmaid with purulent otitis media after nonrecognized scarlet fever. On cultivation, Streptococcus pyogenes, group A (Lancefield), type 3 (Griffith) was isolated from 108 of the patients and from pus from the ear of the milkmaid. The cows, on the other hand, and their milk were found to be normal. Inquiry into the conditions under which the milk was distributed to the consumers confirms the connection between the otitis media in the milkmaid and the epidemic of scarlet fever. The cases in this epidemic were mild, but still one patient died of complicating bronchopneumonia.

Journal of Laryngology and Otology, London

54: 61-120 (Feb.) 1939

The History of Cancer of the Larynx. St. Clair Thomson.—p. 61.
Normal Hearing by Bone Conduction. A. Greenbaum, Phyllis Margaret Tookey Kerridge and E. J. Ross.—p. 88.

Journal of Tropical Medicine and Hygiene, London

42: 17-32 (Jan. 16) 1939

The Ultraviolet Absorption Spectrums of Serums in Human Schistosomiasis. A. Hassan.—p. 17.
Brief Notes on Columbensis Fever: Report of Case. G. Scotti.—p. 19.
Diseases of the Skin in Negroes. L. J. A. Loewenthal.—p. 20.

42: 33-48 (Feb. 1) 1939

*Treatment of Oriental Sore (Leishmaniasis Cutanea) with Fuchsin Paint. A. Castellani and G. Amalfitano.—p. 33.
Incidence of Bacterium Aerogenes and Intermediates in Human Feces. M. Mollari, W. A. Randall and R. Reedy.—p. 34.
Diseases of the Skin in Negroes. L. J. A. Loewenthal.—p. 36.

Treatment of Oriental Sore with Fuchsin.—Castellani and Amalfitano obtained satisfactory results with fuchsin paint in the treatment of three cases of cutaneous leishmaniasis. The fuchsin paint consists of 10 cc. of saturated alcoholic solution of basic fuchsin and 100 cc. of 5 per cent phenol solution. This is filtered and 1 Gm. of boric acid is added. After two hours 5 cc. of acetone is added, and still two hours later 10 Gm. of resorcinol is added. The solution is kept in dark stoppered bottles. The technic of treatment is as follows: For two days a dressing of boric acid (1 per cent) and resorcinol (1 per cent) is applied to the sore. The parts should be continuously kept moist with the lotion. This removes the crusts and scales present. Then the fuchsin paint is applied to the sore regularly twice a day and 2 cc. of the same solution is given intramuscularly every other day. The solution may also be injected into the nodule

and around it. Every eight or ten days the application of the fuchsin to the sore is discontinued for one or two days, when the boric acid and resorcinol dressing is again applied. The treatment effected a cure in the three cases reported in from two to three and one half months.

Lancet, London

1: 309-368 (Feb. 11) 1939

Treatment of Pneumonia with 2-(*p*-Aminobenzenesulfonamido) Pyridine (Sulfapyridine). A. L. Agranat, A. O. Dreosti and D. Ordman.—p. 309.
*Treatment of Chronic Myeloid Leukemia: Importance of the Myeloblast. M. C. G. Israëls.—p. 317.
Torsion of the Appendix of the Testis. G. D. F. McFadden.—p. 320.
Aneurysm of Both Popliteal Arteries. C. Flemming.—p. 322.
*Urea Clearance in Hematemesis. D. A. K. Black.—p. 323.
Excretion of Injected Aneurin (Vitamin B_1). J. Marrack and Helga Franziska Höllering.—p. 325.
Intraperitoneal Rupture of Rectum. T. A. James.—p. 326.

Treatment of Chronic Myeloid Leukemia.—Israëls cites seven cases of chronic myeloid leukemia in which myeloblasts appeared in the peripheral blood. When the patient with this disease has not received treatment, the presence of myeloblasts is not of serious significance if they disappear when roentgen therapy is begun. If they increase, the outlook is grave, irrespective of any changes in the total leukocyte count. When myeloblasts appear during treatment, they usually signify that roentgen therapy is no longer effective and that, whatever the total leukocyte count, death is imminent. The completeness of the myeloblastic transformation in the bone marrow is parallel to that in the peripheral blood. The effectiveness of treatment is best judged by the diminution of the proportion of immature leukocytes and by the improvement in the anemia. The anemia should be thoroughly treated and roentgen therapy may be postponed provided the immature leukocytes do not increase and the patient's clinical condition warrants it.

Urea Clearance in Hematemesis.—Black studied the renal function in twelve cases of gastrointestinal hemorrhage. The severity of the condition of some of these cases precluded the adoption of any disturbing procedure and principal reliance was placed on the urea clearance test of Van Slyke. In most of the cases there was a moderate or even a pronounced lowering of urea clearance; after a week the clearance usually rose to within normal limits. A "scatter diagram" was constructed, showing the relationship of urea clearance to red cell volume. Although four of the cases showed considerable divergence, the remainder approximate a linear relationship. This indicates some degree of correlation, in the present cases, between the urea clearance and the red cell volume; the divergent values indicate that other factors besides the red cell volume influence the clearance—a fact which is hardly surprising when one considers the wide normal variation in urea clearance. No correlation appears to exist between the urea clearance and the blood pressure, hemoglobulin or blood urea. After every allowance has been made for low protein intake and absence of diuresis, there is still evidence of diminished urea clearance in these cases. As pointed out by Van Slyke (1934), diminution of clearance must be due either to decreased renal blood flow or to less complete extraction of urea from the blood. The importance of blood flow is, however, suggested by the degree of correlation between the fall in clearance and the red cell volume. Estimations indicate some impairment of renal function. However, the present evidence is insufficient to establish definitely the mechanism of renal impairment.

Practitioner, London

142: 137-240 (Feb.) 1939

Midwifery and the General Practitioner. E. MacLean.—p. 137.
Antenatal Care in General Practice. W. H. F. Oxley.—p. 143.
Delayed Labor. A. Walker.—p. 153.
Diagnosis and Treatment of Disproportion. W. C. W. Nixon.—p. 163.
Management of the Puerperium and Its Minor Disturbances. A. H. Davidson.—p. 171.
Equipment and Instruments for Midwifery in General Practice. J. Beattie.—p. 179.
Diet in Health and Disease: XX. Breast Feeding. C. K. J. Hamilton.—p. 187.
Immediate Surgery in Air Raids: Work in a Casualty Clearing Station. P. H. Mitchiner.—p. 197.
Decompression of the Bladder. H. Bailey.—p. 207.
Psychologic Factor in General Practice. M. O. Raven.—p. 213.
Solutions Used in Injection Treatment of Hernia. M. Lee.—p. 221.
The Practitioner and His Accounts. G. Lowe.—p. 224.

Archives de Médecine des Enfants, Paris

42: 137-190 (March) 1939

Agranulocytic Syndromes in Children. G. Paisseau, J. Ferroir and J. Gautier.—p. 137.
*New Orientations in Treatment of Bronchopneumonias of Nurslings. B. Soria.—p. 146.
Diagnosis of Kala-Azar by Sternal Puncture. S. Bartsocas.—p. 153.
Three Interesting Cases of Tuberculosis in Children. P. Rueda.—p. 155.
Treatment of Tuberculosis in Children. J. Comby.—p. 168.

Treatment of Bronchopneumonias in Nurslings.—According to Soria, bronchopneumonia continues to be one of the diseases which have the greatest mortality rate in nurslings and young children. In nurslings its case fatality is more than 50 per cent. After pointing out that the mechanism of cellular and humoral defense is not yet organized in nurslings, the author discusses the various forms of bronchopneumonia such as the pulmonary, the cardiohepatic, the gastrointestinal, the nervous and the toxi-infectious form. The treatment of bronchopneumonia has remained unchanged in recent years and it must be admitted that until now there has been no specific and efficacious treatment. Some use serums and vaccines, others employ inhalation of oxygen, others autohemotherapy and still others physical therapy. The author uses hypertonic solution of dextrose (from 15 to 20 per cent), which exerts a regulating effect on the disordered metabolism and stimulates the organs in general, particularly the muscular fibers of the heart, increasing the nutrition of the muscle and restoring the tonicity, which had been damaged by the action of the toxins. The disturbances in the acid-base equilibrium of the nurslings with bronchopneumonia lead to a generalized atonia of the entire musculature, by glycogenic insufficiency, which produces a disturbance in the respiratory function and impairs the return of the blood to the general circulation; the result of this is a hypotension which can be observed in several of the aforementioned forms of bronchopneumonia. Muscular hypotonia can be brought about by a diminution of dextrose in the blood stream, also by a diminution of glycogen in the muscles and likewise by a sympathetic phenomenon. The favorable action of dextrose solution on the muscular tonus cannot be doubted. The arterial tension increases after the second or third injection, the pallor and cyanosis change to an almost normal coloration, the dyspnea diminishes, the diuresis increases, the patient becomes quieter and sleeps better, the thirst subsides, the loss of weight is gradually arrested and the appetite returns. In the cardiac form the author observed in addition to the improvement of the general condition also a decrease in the cardiac dilatation. The volume of the congested liver decreased and the pain disappeared. In the nervous form the results were not quite as surprising but the general condition and the arterial tension improved and drainage by lumbar puncture rapidly counteracted the nervous phenomena. In the gastrointestinal form, sugared water in a quantity of from 600 to 700 cc. (20 per cent maltose and dextrin) produced excellent results. In the toxi-infectious form, however, the hypertonic solution of dextrose does not produce such favorable results because of the virulence of the infection. These cases may terminate in death in the course of forty-eight hours. Of the various modes of administration the author regards the intraperitoneal route as the most suitable, pointing out that the left iliac fossa is the best site. He employs a needle from 5 to 7 cm. in length. Shock is avoided by injecting the dextrose solution with 0.5 cc. of a 1:1,000 solution of epinephrine hydrochloride. From 150 to 200 cc. of the dextrose solution is administered daily. The author employed this treatment in more than 150 cases and, as a result, the mortality decreased by from 30 to 35 per cent.

Presse Médicale, Paris

47: 305-320 (Feb. 25) 1939

*Extraction of Projectiles and Foreign Bodies from Heart: Late Results (Twenty Years After.) R. Le Fort.—p. 305.
Rare Cases of Deviation of Cutaneous Allergy to Tuberculin in Tuberculous Children. G. Paisseau, J. Valtis and F. Van Deinse.—p. 307.
*Xenopus Pregnancy Test. E. Elkan.—p. 308.

Extraction of Projectiles from Heart.—Le Fort points out that it is now permissible to reply to the questions so often asked during the war of 1914 to 1918 regarding the immediate and late dangers caused by the presence of pro-

jectiles in the heart or by their extraction from the heart. He reviews the clinical histories of patients who underwent extraction of foreign bodies or projectiles from the heart more than twenty years ago and then discusses the various aspects of the extraction, such as indications for it, dangers involved and technic. In the conclusion he stresses that the extraction of foreign bodies is possible from the walls as well as from the cavities of the heart. The presence of free projectiles in the cavities of the heart involves considerable dangers, so that their removal is advisable. However, it should be undertaken with all necessary precautions. The projectiles which are enclosed in the cardiac walls do not seem to cause grave dangers. They may remain buried in the muscle without provoking grave anatomic lesions, but their presence is often accompanied by serious functional disturbances. The extraction of projectiles from the anterior wall is a simple operation. However, the extraction of projectiles from the postero-inferior wall is a complex procedure and may become extremely difficult in cases of cardiopericardiac symphysis. The small projectiles may be abandoned, provided they are well tolerated. The large ones and those which cause complications should be removed. The danger caused by the presence of a projectile in contact with the large vessels of the heart is less grave than is imagined. The author says that he demonstrated twenty years ago that the vessels defend themselves ordinarily against metallic foreign bodies either by enveloping them in their wall or by isolating them by cellular cleavage. The indications for a surgical intervention should be carefully estimated in each case and the operation must be carried out with great care. All blind extraction procedures are prohibited. Generally the cardiac muscle is extremely adherent to the shell fragments. It must be separated with care and patience, fiber by fiber. Not only is it necessary to have a survey over the entire operative field but also it must be possible to enlarge the opening without delay. Every resection of rib or costal cartilage gives mediocre late results and leaves a weak or deformed area in the wall. Only those procedures should be used which permit a temporary removal of the ribs by section of their cartilages and of their intercostal spaces. A rigorously exact reparation of the wall must terminate the operation. The immediate surgical results are good and they persist in the course of years.

Xenopus Pregnancy Test.—Elkan says that the toad pregnancy test was first described by Hogben in 1930. He himself employed this pregnancy test last year 360 times, using 2,291 toads (Xenopus laevis Daudin) for this purpose. The test proper starts with the collection of urine. The patient is urged to limit the fluid intake as much as possible on the day before the specimen is collected so that the specific gravity of the urine will be high enough. The urine that is eliminated on the day following the restricted fluid intake has a specific gravity of from 1.020 to 1.030, and from 100 to 200 cc. of this urine is sent to the laboratory. It is more difficult to proceed with the test on urines with low specific gravity. Another factor is that the patient must not take any drugs on the day preceding the test. For injection into the dorsal lymph sac of the toads it is possible to use either 2 cc. of untreated urine or 1 cc. of extract, which is prepared according to Zondek's method of precipitation. After the injection the toads are placed in special jars, where they rest on perforated platforms so that they cannot eat their own spawn. For several hours the jars are kept at a temperature of 24 C. The most rapid positive result which the author observed was that oviposition took place four hours and fifty minutes after the injection. The usual time is from six to eight hours. Unfortunately the effect of the same urine on a series of six toads is not always uniform. However, the exactness of the xenopus pregnancy test does not seem to differ from that of the Aschheim-Zondek and Friedman tests. It permits the diagnosis of pregnancy in the early stages with less delay than do other biologic tests. The animals do not have to be killed to obtain the results; they can be used over again. The method is not more expensive than are other biologic pregnancy tests, and the technic is simple and free from error.

Schweizerische medizinische Wochenschrift, Basel

69: 189-211 (March 4) 1939. Partial Index

Question of Tubal Sterilization. E. Baumann and O. Geiser.—p. 189.
*Blood and Bone Marrow in Bang's Disease (Brucella Abortus Infection). N. Schmid.—p. 191.
Trial with Endovesical Ozonotherapy in Urinary Colibacillosis. M. Secrétan.—p. 193.
Pathogenesis of Chronic Hematogenous Disseminated Tuberculosis. W. Schlesinger.—p. 196.

Blood and Bone Marrow in Brucella Infection.—Schmid says that the diagnosis of Brucella abortus infection is based on the positive outcome of bacteriologic and serologic methods, namely (1) the demonstration of Brucella abortus in the blood culture or animal tests, (2) the demonstration of agglutinins in the serum and (3) the complement fixation test. In this paper the author gives especial attention to the morphologic aspects of the blood, pointing out that the blood picture in Brucella abortus infection resembles most that of abdominal typhoid. To be sure, this applies only to the leukopoiesis, for the erythrocytes are influenced only slightly or not at all, except that occasionally a mild, secondary anemia is observed. The leukocyte values may decrease to 2,500. Most frequently their number is between 3,000 and 6,000. Mononucleosis exists regularly and the lymphocytes and monocytes show a relative increase, but monocytosis is not as frequent as is lymphocytosis. Among the relatively reduced neutrophils, a deviation to the left is often noticeable and staff-nuclear cells appear. The eosinophils may disappear completely, but they are generally present in reduced numbers. As in typhoid, the leukopenia becomes more pronounced up to a certain point in the course of the disease; but, as recovery approaches, the blood picture becomes normalized. The monocytes behave differently than in typhoid, and the presence of neutrophils militates against typhoid and for Brucella abortus infection. With the exception of the cases that are complicated by hemorrhagic diathesis, the blood platelets remain unchanged. The sternal marrow shows chiefly a myelocytic and a promyelocytic composition, at least in the cases without complications. The author regards this medullary picture as indicative of a mild disturbance in maturation. The medullary changes are of no diagnostic significance. If complications arise in Brucella abortus infection, the blood picture shows a varying behavior. Since little is known regarding the bone marrow in complicated cases, the author gives a detailed report of such a case. The patient had a cutaneous infection with Brucella abortus. At first the course was typical, but then a complication arose in the form of a hemorrhagic diathesis on the basis of a thrombopenia and with hemorrhages in the mucous membranes, necroses, generalized purpura, hematuria and cerebellar hemorrhages. No sternal puncture was made while the patient was alive, on account of the danger of hemorrhage. However, the necropsy revealed periostitis, chronic osteomyelitis with fibrosis, nodules of Brucella abortus infection in miliary dissemination, hemorrhages and atrophy of the substantia spongiosa. Liver and spleen likewise contained nodules of Brucella abortus infection in miliary dissemination. The author thinks that such a characteristic histologic picture is new in Brucella abortus infection. Some of the medullary aspects approach those of panmyelopathy. However, further medullary studies will be necessary to gain a better insight into these problems.

Klinische Monatsbl. f. Augenheilkunde, Stuttgart

102: 1-160 (Jan.) 1939. Partial Index

Megalocornea in Its Connection with Other Deviations in Members of Same Family. R. G. Posthumus.—p. 1.
Trepanation Cyclodialysis. K. Bergler.—p. 49.
Mechanical Injuries of Eye. Ida Czukrász.—p. 57.
Restoration of Lacrimal Passages. Z. Nižetić.—p. 67.
Two-Stage Dacryocystorhinostomy. Z. Nižetić.—p. 71.
*Ocular Tuberculosis and Benign Lymphogranulomatosis (Boeck's Sacroid, Multiple Benign Miliary Lupoid). F. W. Meyer.—p. 76.

Ocular Tuberculosis and Benign Lymphogranulomatosis (Boeck's Sarcoid).—Meyer shows that the ocular disease which develops in the course of benign lymphogranulomatosis (Schaumann's term for Boeck's sarcoid) or which in some cases exists long before the benign lymphogranulomatosis appears is of tuberculous etiology. The tuberculous character

is indicated by the clinical picture, by the course of the disease and finally by the tendency to the development of secondary phthisis in various organs in the course of benign lymphogranulomatosis. The following aspects are characteristic for the completely developed symptomatology of Schaumann's benign lymphogranulomatosis: peculiar cutaneous efflorescences, osseous changes that are designated as osteitis tuberculosa multiplex cystica (Jüngling), a simultaneous involvement of groups of lymph nodes and peculiar roentgenologic changes in the lungs with enlargement of the mediastinal lymph nodes. In a number of cases ocular disorders develop which exhibit the typical aspects of an ocular tuberculosis. Most likely they represent true tuberculosis of the eye. If the process is completely developed, the tuberculin reaction is usually negative. In the frequent concurrence of benign lymphogranulomatosis and true tuberculosis, the outcome of the tuberculin reaction seems to be determined by the predominance of the one or the other disease. The importance of the roentgenologic aspects of the pulmonary changes is disputed. At any rate, it seems inadvisable to base the diagnosis of benign lymphogranulomatosis only on the roentgenologic changes and perhaps on the negativity of the tuberculin reaction. The outcome of the tuberculin reaction has no corroborative power, since the negative outcome can be observed also in tuberculous processes of other organs and in pulmonary tuberculosis. The peculiarity of the pulmonary aspects does not permit the classification of such cases into a special group, particularly if there exist no changes in other organs. Only microscopic observations permit the definite diagnosis of Schaumann's benign lymphogranulomatosis. Ocular tuberculosis is not an essential aspect of benign lymphogranulomatosis but it frequently accompanies the process; to be sure, it does so not more frequently than does tuberculosis of other organs. Benign lymphogranulomatosis eventually may be an atypical tuberculosis; the term does not indicate the etiology of the peculiar disease.

Klinische Wochenschrift, Berlin

18: 145-184 (Feb. 4) 1939. Partial Index

Investigations on Metabolism of Vitamin B_1 in Healthy Persons and Patients. H. Schroeder.—p. 148.
*Permeability of Blood-Cerebrospinal Fluid Barrier for Sulfanilamides. Vonkennel and W. Schmidt.—p. 150.
Porphyrinuria and Intestinal Saprophytes. A. S. von Mallinckrodt-Haupt.—p. 153.
4.4'-Dioxy-Alpha-Beta-Diethylstilbene, a Synthetic Compound with Action of Estrogenic Preparations. H. Kreitmair and W. Sieckmann.—p. 156.
Value of Bacteriologic Examination of Sternal Marrow. H. E. Bock.—p. 162.
Paroxysmal Tachycardia. H.-J. Kohbrok.—p. 165.
*Diagnosis of Syphilis by Means of Coagulation Reaction in Cerebrospinal Fluid. E. Carlinfanti.—p. 168.

Permeability for Sulfanilamides of Blood-Cerebrospinal Barrier.—Vonkennel and Schmidt studied the sulfanilamide content of the blood and its passage into the cerebrospinal fluid after oral and parenteral administration. In this paper they give their attention to the permeability of an intact blood-cerebrospinal barrier for sulfanilamides. After the oral or parenteral administration of various sulfanilamides they examined the blood and the cerebrospinal fluid at hourly intervals for a period of five hours. Summarizing their observations, they stress the following points: 1. Soluble prontosil could not be detected in the cerebrospinal fluid. 2. Solution of sodium sulfanilate was found to pass into the cerebrospinal fluid only in the smallest quantities. The salt effect and the hydration capacity are suggested as explanation for this. 3. The para-amino-benzene-sulfonamide (prontosil album) showed an excellent penetration into the cerebrospinal fluid. 4. The dimethyl-disulfanilamide showed practically no permeation capacity, under the conditions employed by the authors. They think that this is due to the slight concentration in the blood and to the molecular volume of the substance. 5. The para-amino-benzene-sulfonacetylamide (albucid) and a carbohydrate compound of sulfanilamide showed the same qualitative behavior as does the pure sulfanilamide.

Coagulation Reaction in Cerebrospinal Fluid in Diagnosis of Syphilis.—Carlinfanti discusses the theoretical foundations and describes the technic of a method which permits the demonstration of syphilitic antibodies and their quantitative examination in small quantities of cerebrospinal fluid and with the aid of inexpensive reagents. It is a modification of a coagulation reaction which was described in 1914 by Hirschfeld and Klinger. It has been employed on 418 specimens of cerebrospinal fluid and the impression has been gained that in view of its sensitivity and because it differs in nature from other reactions it could render good service as an accompanying test to the Wassermann reaction and to the flocculation reactions.

Münchener medizinische Wochenschrift, Munich

86: 121-160 (Jan. 27) 1939. Partial Index

Measuring of Dose in Short Wave Therapy. J. Kowarschik.—p. 121.
*Blood Transfusion in Treatment of Acute Severe Carbon Monoxide Poisoning. K. G. Koch.—p. 126.
Cyclically Conditioned Pains in Breasts. K. Evelbauer.—p. 128.
Experiences with Cycloscopy According to Samuels. R. Wenner.—p. 131.
Fundamentals of Problem of Vitamin Requirements. H. Schroeder.—p. 133.
Remarks on Bulgarian Cure. M. John.—p. 135.
Postvaccinal Disturbances. S. Werner.—p. 136.

Blood Transfusion in Carbon Monoxide Poisoning.—Koch states that the chief effect of carbon monoxide poisoning and the factor that threatens the life of the patient is the anoxemia, resulting from the formation of carboxyhemoglobin. After discussing measures that have been recommended to counteract this anoxemia, such as inhalation of oxygen or of oxygen and carbon dioxide and the administration of methylene blue, he points out that hemoglobin, which is introduced by means of blood transfusion, will act at once as an oxygen vehicle. Patients who have the signs of severest intoxication, that is, those in whom the reflexes and reactions have been abolished, in whom respiration and circulation are greatly impaired and who do not respond to strong stimulants, many have such a small amount of oxyhemoglobin that inhalation of oxygen, circulatory stimuli and venesection will not prevent death. The author demonstrates, on the basis of case histories, that in such cases blood transfusion after a previous venesection may save the patient's life, because the large quantity of normal hemoglobin introduced in this manner will provide the lacking oxygen more rapidly than will other methods. It is advisable to precede the transfusion by venesection. This procedure removes carboxyhemoglobin from the circulation because the blood in the depots, which is forced into the circulation following venesection, does not absorb the carbon monoxide as rapidly as does the circulating blood. Moreover, the loss of blood stimulates the emergence of new erythrocytes from the bone marrow. If in severe cases of carbon monoxide poisoning venesection and blood transfusion have provided the organism with sufficient oxygen to avert death, the further treatment with oxygen and circulatory stimulants has better prospects of success. The author describes the clinical histories of two patients with severe carbon monoxide poisoning who probably would not have survived without the repeated blood transfusions.

86: 161-200 (Feb. 3) 1939. Partial Index

Treatment of Accidental Wounds. F. König.—p. 161.
Prophylaxis of Tetanus or Not? F. Jaeger.—p. 164.
*Prognosis of Arborization Block. F. Kienle.—p. 168.
Danger of Pure Sunstroke, Without Overheating in High Mountains. K. Leonhard.—p. 174.

Prognosis of Arborization Block.—Kienle maintains that the diagnosis of arborization block can be based only on the electrocardiogram. After citing the electrocardiographic characteristics which Weber designates as the basis of the diagnosis of the arborization block, he says that it was generally believed that extensive destruction of or severe damage to the fine terminal fibers of the specific connecting system was the cause of these severe electrocardiographic changes. However, some investigators showed that extensive myocardial changes are the cause of the arborization block and this was proved by the detection of severe organic changes in the myocardium. On the other hand there were investigators who maintained that there is also a "functional" arborization block and it was actually proved that an arborization block was caused by coronary insufficiency and disappeared after treatment with theophylline with ethylene diamine. Here the deficient blood supply had apparently caused "fatigue" but not organic damage in the conduction system. The author further shows that many electrocardiographic curves which have been designated as indicating arbori-

zation block were really branch block curves because the narrowly circumscribed electrocardiographic characteristics of arborization block were not strictly adhered to. The prognostic evaluations based on such records are therefore erroneous. For this reason he investigated the prognosis of arborization block in twenty-five patients who were observed at his clinic and who remained under observation until death. In this material the prognosis of arborization block proved much more unfavorable than was indicated in earlier reports. All of the twenty-five cases terminated in death in the course of one year. The average survival was three and one half months. The mortality curve shows a steep downward trend during the first two months and this is ascribed to the rapid fatal termination of the cases of arborization block, which are caused by infarct. A case is described in which multiple infarcts produced the electrocardiographic aspects of an arborization block, whereas the typical signs of infarct were absent from the electrocardiogram.

Zeitschrift f. d. ges. Neurol. u. Psychiatrie, Berlin

164: 417-580 (Jan. 23) 1939

Clinical Aspects of Exogenic Psychoses. K. Westphal.—p. 417.
Studies on Vitamin C Content of Cerebrospinal Fluid: Seasonal Fluctuations of Vitamin C Content in Cerebrospinal Fluid of Nursling. M. Kasahara and I. Gammo.—p. 492.
*Question of Spontaneous Remissions of Schizophrenic Psychoses with Special Consideration of Duration of These Remissions: What Can Be Attained with the Shock Therapy of These Conditions? G. Langfeldt.—p. 494.
Investigations on Pavlov's Reflexes in Patients with Mental Defects. M. Schröter.—p. 501.
Contribution to Knowledge of Pyknolepsy. M. Rohde.—p. 516.
Relations Between Changes in Blood Sugar, Clinical Symptoms and Curative Course in Insulin Therapy of Schizophrenic Patients. E. Hofmann.—p. 531.
Circumscribed Arachnoidal Sarcoma of Cerebellum. O. Foerster and O. Gagel.—p. 565.

Spontaneous Remissions of Schizophrenic Psychoses.—Langfeldt deplores that many investigators of the shock therapy of schizophrenia overlook the fact that their statistical reports are of limited value as long as they fail to state what forms of schizophrenia were treated. He shows that the psychoses which are designated as schizophrenia can be divided into two main groups: (1) the typical schizophrenias, that is those cases which in Kraepelin's terminology are designated as dementia praecox and (2) the so-called schizophrenias, the "schizophreniform psychoses." This second group includes chiefly persons with some manic-depressive aspects and persons with psychopathic tendencies (paranoid, hysterical, asthenic cyclothymic schizoid and others). The typical and the atypical schizophrenias differ greatly in their prognosis. The atypical schizophrenias are nearly all spontaneously cured and, except for a few cases with an intermittent course, the cure is permanent. Shock therapy shortens the duration of these atypical cases. However, it cannot be definitely said as yet whether this is a permanent advantage. Among the schizophreniform conditions that have an acute onset there are also cases that show the typical schizophrenic symptomatology. If these cases are not treated they have an unfavorable prognosis. However, it will require further investigations to determine whether these cases are amenable to shock therapy. The author says that there is an increase in reports which show that the atypical schizophrenias are the ones that react favorably to shock therapy with insulin or metrazol. He emphasizes that all reports on shock therapy of schizophrenia should give attention to the differentiation between typical and atypical cases of schizophrenia.

Vestnik Khirurgii, Leningrad

56: 655-828 (Nov.) 1938. Partial Index

*Magnesium Sulfate Blood Transfusion in Experimental Shock. B. P. Abramson.—p. 659.
Clinical Observations on Hexenal Anesthesia. T. M. Ayzman and G. Ya. Iosset.—p. 671.
Treatment of Compound Fractures of the Cranial Vault. G. Ya. Iosset.—p. 680.

Magnesium Sulfate Blood Transfusion in Experimental Shock.—Abramson states that 100 blood transfusions performed in his clinic with magnesium sulfate as a preservative demonstrated the usefulness of this method. In order to test its effect in traumatic shock the author performed animal experiments in which profound shock was induced in anesthetized cats by repeated evisceration and traction on the mesentery. It was found that bleeding the animal one half hour or forty-eight hours before the experiment rendered it more liable to shock. The latter was of such degree that the animals could no longer be saved by intravenous saline transfusion. With the use of magnesium-blood transfusion the author succeeded in saving eight of ten animals. The author concludes that the effect of magnesium sulfate-blood in shock is not inferior to that of citrated or whole blood.

56: 829-932 (Dec.) 1938. Partial Index

Operation for Sectioning of Splanchnic Nerves in Arterial Hypertension. S. S. Sharimanyan.—p. 831.
*Umbilical Cord as Bone Suture Material. L. G. Shkolnikov.—p. 839.
Significance of Dissecting Aneurysm in Surgery. Ya. A. Bukhshtab.—p. 847.
Organization and Work of Surgical Division in Distant Regions (Periphery). F. G. Uglov.—p. 856.

Umbilical Cord as Bone Suture Material.—Shkolnikov describes a method of preparing human umbilical cord to be used as bone suture material. After the blood is expressed from the cord by pressure and rinsing in water, it is dried, shaped and stretched. The dried cord is kept for one month in a solution containing pure iodine 10 parts, potassium iodide 10, alcohol 1,000 and glycerin 80. The solution is changed twice in the course of the month. The cord thus treated proved sterile after multiple culturing. Its tensile power amounted to from 20 to 80 Kg. The author demonstrated in animal experiments that this suture material is absorbed slowly, that is in from two to six months. Roentgenograms and microscopic sections demonstrated a stimulating effect on the various bony elements, in particular the periosteum. The suture was applied in twelve clinical cases, in four of which there were pseudarthroses, in three compound fractures and in five simple fractures. The suture held the bony fragments satisfactorily. There was no infection. The author concludes that this biologic homoplastic material is well suited for bone suture because of its tensile strength, resistance to infection, slow absorption and osteogenic effect.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

83: 727-866 (Feb. 18) 1939. Partial Index

Psychoses in Heart Disease. H. C. Rümke.—p. 728.
Examination of Blood and of Blood Pressure During Airplane Trip from Amsterdam to Batavia and Back. C. J. van Mervennée.—p. 736.
*Leptospirosis of Dogs in Antwerp. N. van der Walle.—p. 740.
Intestinal Myiasis Caused by Larvae of Sarcophaga Haemorrhoidalis in Child. L. S. Wildervanck.—p. 756.

Leptospirosis in Dogs.—Van der Walle examined 100 dogs of the municipal enclosure for stray animals at Antwerp for leptospirosis. He was able to demonstrate the presence of antibodies to leptospiras in the blood of forty-four of these animals. The number of cases in which Leptospira canicola was more strongly lysed than Leptospira icterogenes was about twice as great as the number in which the other reaction was more prominent. The percentage of infection increased with the age of the dogs. On the whole, a larger number of positive reactions was detected in male than in female dogs. Leptospira canicola was cultivated from the kidneys of one of the apparently healthy dogs. This leptospira appeared only slightly pathogenic for guinea pigs; jaundice was noticeable only after the second passage. Two young dogs which had been intravenously injected with this culture had only a slight temporary conjunctivitis. One of these animals was killed twenty days after the infection; the Levaditi stain showed numerous leptospiras in the kidneys, but exclusively in the tubules.

Acta Chirurgica Scandinavica, Stockholm

82: 1-98 (Feb. 13) 1939

Hemophilia with Spontaneous Hemorrhage in Iliopsoas Muscle Followed by Injury to Femoral Nerve: Case. A. Tallroth.—p. 1.
*Posttraumatic Disturbances in Region of Appendix, So-Called Traumatic Appendicitis. S. Grettve.—p. 11.
Neurogenic Factor in Strangulation Ileus. H. Wahren.—p. 57.
*Trauma and Leukemia. T. Olovson.—p. 63.
Surgical Treatment of Split Fractures at Proximal End of Tibia. E. Landelius.—p. 90.

Posttraumatic Disturbances of Appendix.—Grettve asserts that the significance of trauma as an etiologic factor in posttraumatic disturbances of the appendix has been overrated. If a blunt force hits the lower right part of the

abdomen directly and with great violence, it may result in rare cases in real damage to the appendix. Minor injuries probably heal spontaneously, but those of a major kind may be complicated by inflammatory processes necessitating operative intervention. If operation is not unduly postponed, it should be possible to ascertain whether the condition is the direct result of injury. On the other hand, it is questionable whether such cases should be regarded as true appendicitis even if the damaged appendicular wall has been overtaken by necrosis and is the seat of secondary inflammatory processes. No external violence is likely to lead to typical appendicitis in a previously healthy and normally functioning organ. On the other hand the possibility exists, at any rate theoretically, that a direct violence to the appendicular region may become the exciting factor in the production of appendicitis in an organ which is the seat of old pathologic changes and which, as a result of impeded emptying, is already threatened by a spontaneous attack. In practice it is probably never possible to exclude with certainty that the appendix before the accident had been the seat of a quiescent or developing inflammatory process which till then had produced no manifest symptoms. Direct violence to the abdomen farther away from the appendicular region or a sudden reflex contraction of the abdominal muscles as a result of the accident cannot produce either damage to the appendix or appendicitis. In some cases prevailing conditions may justify the assumption that appendicitis had been present at the time of the accident. It seems impossible, however, to appraise the true significance of a trauma in a patient with a previously obscure appendicitis. The appendicitis may have begun at approximately the same time at which the patient sustained the accident. On the other hand the violence may have aggravated the inflammatory process, but it hardly will be possible to state to what extent the duration and final outcome of the disease were influenced by the trauma.

Trauma and Leukemia.—Olovson describes two cases of myeloid leukemia which occurred in connection with traumas. The leukemia developed after fracture in one and after contusion in the other. Reviewing the literature, the author detected sixty-seven similar cases. In forty of the sixty-nine reported cases the trauma consisted in contusion of the abdomen (splenic region), in twenty-one cases other regions were affected; in eight cases the accident had caused fracture of some bone. The possibility of trauma as a cause of leukemia is being discussed in the light of the present day theories as to how leukemia arises. Some causal connection may quite well exist; the trauma may constitute the exciting factor in a person predisposed to leukemia. Yet it would seem that trauma can play only a small part, as traumas occur frequently but traumatic leukemia is a rare condition.

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Hospitalstidende

*Histologic Investigations on Pylorus Gland Organ in Pernicious Anemia. E. Meulengracht.—p. 11.
*Early Diagnosis of Pleural Empyema. M. Olesen and U. Hansen.—p. 19.

Pylorus Gland in Pernicious Anemia.—Meulengracht's examination of the stomach and duodenum from eight patients with clinically and anatomically diagnosed pernicious anemia revealed pronounced changes in the fundus, with atrophy of the glands and disappearance of the special glandular elements. The changes were less definite in the pylorus and the pyloric glands seemed to be relatively well preserved. In the Brunner glands no changes could be demonstrated microscopically. The author discusses the possibilities for reconciling these results with the present conception of the pathogenesis of pernicious anemia. He suggests as the most probable explanation, wholly or in part, a failure of the interaction between the intrinsic and extrinsic factors which originate the third principle, or liver factor, a process which must be ascribed to the intestine, especially the small intestine.

Early Diagnosis of Pleural Empyema.—Olesen and Hansen describe a procedure for recognizing an empyema in its earlier phase, while the pleural exudate is still serous or turbid. The cells from the exudate are stained by Olesen's supravital staining method. Living leukocytes absorb the neutral red in their granules, while dead leukocytes cannot be stained in the weak solution used. In the exudate from seven cases of pleurisy between 22 and 100 per cent of the leukocytes could not be stained, and in these cases an empyema developed in from two to sixty days. In 101 cases in which all the leukocytes were stained, no empyema occurred.

Norsk Magasin for Lægevidenskapen

*Case of Idiopathic Dilatation of Choledochus (or Congenital Choledochus Cyst). P. Bull.—p. 31.
Mass Psychosis and Its Effects. D. Abrahamsen.—p. 36.
Blood Type A_2B with Strongly Developed Agglutinin α_1 and Relation of This Type to Blood Transfusion. O. Hartmann.—p. 39.
Variations of Content of Vitamin C in Potato. E. Mathiesen.—p. 42.

Congenital Choledochus Cyst.—Bull states that there are now about 100 known cases of this disorder. Only five cases have been recorded in patients over 41. His patient, a woman aged 42, had abdominal pain, probably due to the biliary disturbance, during childhood and a symptom free period between the ages of 18 and 31 and transient jaundice two years later. On gastrojejunostomy for a callous pyloric ulcer when the patient was 35 no tumor was discovered. Seven years later there was pain in the epigastrium radiating to the spine, with dyspnea; a round, tender, fluctuating tumor, thought to be a retroperitoneal cyst originating from the pancreas, filled the epigastrium. After puncture and removal of 2,250 cc. of thick dark fluid idiopathic dilatation of the common bile duct was diagnosed. Cholecystoduodenostomy was done. Grave infection in the cyst followed and 3,000 cc. of fetid fluid was removed on repuncture; hemorrhagic nephritis and hypochloremic uremia developed. Recurring retention necessitated a third puncture and drainage, with removal of 1,500 cc. of fetid pus. Steady improvement set in and on discharge no tumor was palpable. The author says that idiopathic dilatation of the common bile duct predominates in women. The cardinal symptoms are pain, tumor and jaundice. Grave complications may occur; the contents of the cyst may become infected before or after anastomosis between the cyst and the intestine, there may be a marked hemorrhagic diathesis, and in rare cases the cyst may rupture into the abdomen. Correct diagnosis before operation is said to have been made in only five or six cases. The prognosis depends first of all on the patient's condition at the start of surgical treatment. The mortality for the known cases is about 60 per cent. All authors agree that a communication must be established between the bile duct and stomach or intestine, whether primarily or after preliminary drainage; secondary anastomosis must not be long delayed.

Medicinsk Revue

Duodenal Diverticula. S. Quist-Hanssen.—p. 45.
*Phlegmonous Gastritis. K. Schnitler.—p. 51.

Phlegmonous Gastritis.—Schnitler says that in two of his cases of phlegmonous gastritis the onset was acute and death occurred within four days, while in another, with pain in the epigastrium for several days before admission, the course was more protracted. In the latter, certain reparative changes appeared microscopically in the form of a fairly active formation of connective tissue and fibroblasts. The infection was due to streptococci, either in pure culture or together with staphylococci. In the one case there was a chronic gastritis from misuse of alcohol and a lesion from a bone splinter which had penetrated into the gastric submucosa. In the others, erosions and ulcerations in the gastric mucous membrane are regarded as the port of entry. In phlegmonous gastritis an acute inflammation is present in the submucosa, partly with the picture of a diffuse phlegmon, partly more localized abscesses, or both. The inflammation may progress and occupy practically the whole stomach or be more limited. In the localized cases the seat of the process is usually the pylorus or its immediate vicinity. Diagnosis is not generally made until operation or necropsy. Prognosis is grave. Treatment of the acute cases is surgical. In the localized cases recovery has followed resection of the stomach. In the diffuse form treatment can be only palliative.